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ABSTRACT

This issue reports research that addresses the needs and future of business education, work-based initiatives, business educators' use of the Web, and technology skills for entry-level workers. "Editorial Comment: Scholarship of the 21st Century" (Moore) provides an overview of the issue. "Quality Business Teacher Education: Perceptions of Graduates Employers" (McEwen) uses study results to describe a quality teacher preparatory education program. "Educator Externships: View from the Trenches" (McPherson et al.) reports perceptions and attitudes of educators involved the work-based experience. "Analysis of Factors Associated with Research Productivity of Business Education Faculty" (Bartlett et al.) describes an organizational culture and support for research in the institutions where the business educators work. "Business Educators' Knowledge of Web Pages: Investigation of Professional and Classroom Use" (Alexander) reveals that less than half of the respondents had training to design Web pages and had a course or professional Web page. "Business Education in South Carolina: Implications for All Business Education Programs" (Brown, Swafford) discusses the business education teacher shortage and implications for employing teachers not graduating from "quality" teacher education programs. "Work-Based Learning Initiatives, Anticipated Benefits, and Stakeholder Involvement: Survey of State School Administrators" (O'Connor) identifies what involvement and benefit there is to administrators, teachers, students, and parents. "Assessment of Six Career Development Factors from a Social Cognitive Theoretical Perspective" (Smith) reports on the validation of the Career Development Self-Efficacy Scale. "Needed Workplace and Computer Skills: Regional Study" (Henderson, Bartholome) determines workplace and computer literacy skills for entry-level, non-baccalaureate employees. "Spreadsheet Competencies Needed for Entry-Level Managerial Positions in Accounting and Business Information Systems" (Bush, LaBonty) provides a clear set of spreadsheet competencies

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that should be addressed in curriculum development. (YLB)

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NABTE REVIEW

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National Association for Business Teacher Education

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TABLE OF CONTENTS

NABTE Executive Committee and Review Editorial Board 5

Editorial Comment: Scholarship of the 21st Century 7
Wayne A. Moore

Manuscript Preparation Guidelines for the 2004 *NABTE Review* 9

Quality Business Teacher Education: Perceptions of Graduates and Employers 10
Beryl C. McEwen, 2002 Outstanding NABTE Review *Article*

Educator Externships: A View from the Trenches 18
William McPherson, Carolyn Rainey, Terry D. Roach, Harriet Rogers, and Nathalis Guy Wamba

An Analysis of Factors Associated with Research Productivity of Business Education Faculty 26
James E. Bartlett II, Joe W. Kotrlik, Chadwick Higgins, and Heather Williams

Business Educators' Knowledge of Web Pages: An Investigation of Professional and Classroom Use 33
Melody W. Alexander

Business Education in South Carolina: Implications for All Business Education Programs 39
Herbert F. Brown and Ann Swafford

Work-Based Learning Initiatives, Anticipated Benefits, and Stakeholder Involvement: A Survey of State School Administrators 43
Bridget N. O'Connor

Assessment of Six Career Development Factors from a Social Cognitive Theoretical Perspective 52
Sheila M. Smith

Needed Workplace and Computer Skills: A Regional Study 58
Donna Henderson and Lloyd W. Bartholome

Spreadsheet Competencies Needed for Entry-Level Managerial Positions in Accounting and Business Information Systems 69
Marcia L. Bush and Dennis J. LaBonty

2001 Business Education Research Studies 75

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2002–2003 NABTE Review Editorial Board

The 2002 *NABTE Review* would not have been possible without the authors who submitted manuscripts, as well as the diligent efforts of the 2002-2003 *NABTE Review* editorial board. The manuscripts for the *NABTE Review* are selected through a blind review process. The authors' names are removed from manuscripts, and each manuscript is directed to a minimum of three reviewers. Reviewers use a set of criteria to evaluate the manuscripts they receive. In addition, they provide a general recommendation on whether the manuscript should appear in the current issue.

These reviewers do not know what manuscripts are directed to them for review, and they are not informed of the overall results of the review. They learn what manuscripts are included in the *NABTE Review* in the same way that all other NABTE members do, that is, through the publication of the *NABTE Review*.

In forming the board to serve for the 2002 and 2003 issues, regional NBEA presidents were asked for recommendations for review board members. In addition, NABTE members were asked to indicate their interest in serving on this board. When the request for reviewers for the *NABTE Review* went out, there was an overwhelming response from NABTE members. The editor wants to thank the many NABTE members who expressed interest in serving as a reviewer.

These are the members of the NABTE Review Editorial Board for the 2002-2003 issues. Should any of these members become unavailable, the editor will contact others in the region, based on their interest expressed in the Call for Reviewers, to fill the vacancy. The review process is one that sets aside all concerns except the quality of the manuscript and the value it has to the profession. We thank these members for their efforts in making the 2002 spring and fall *NABTE Review* issues possible.

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The editor also expresses special thanks for the valuable assistance of Becky Boarts and Jill Rakvic, graduate assistants at Indiana University of Pennsylvania. These individuals helped a great deal with the administrative aspect of the editorial board.

Editorial Comment

Scholarship of the 21st Century

Wayne A. Moore, Indiana University of Pennsylvania, Indiana, Pennsylvania

University faculty are a key source of new information and knowledge in the business world. Peter Drucker maintains that if knowledge is information in action, then the action of business taking and using information from the university is one way knowledge is created (Williams, 2001). Different cultures exist in the university and in business, and change is common to both. Each culture has to learn to conduct business differently; and both are being encouraged to collaborate with each other and find commonalities. Demographic trends, shifts in the job market, emergence of new information and communication technologies, and ongoing reform and innovation in K-12 education have set the stage for better linkages between industry and education.

The definition of scholarship in the 21st century has been expanded to reflect a variety of approaches to and types of research. The term teacher-scholar is used as a standard in higher education to identify one who understands the subject matter deeply enough to structure, select, and organize it to effectively communicate with students.

Barlett, Kotrlik, Higgins, and Williams conducted a study on research productivity of business education faculty. Included in the study was a description of organizational culture perceptions that exists to support research productivity. The researcher's scholarship should demonstrate a commitment to creating new knowledge, applying knowledge to solve problems, synthesizing various strands of knowledge, and understanding how students learn.

Scholarship Reconsidered (Boyer, 1990) proposed that America's colleges and universities need a fresh vision of scholarship in order to tap the full range of faculty talents and encourage other activities that also need to be accomplished. Boyer argued "scholarship means engaging in original research. But the work of the scholar also means stepping back from one's investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge effectively to students"(Boyer, 1990). The report concluded that "scholarship" be recognized as four areas—discovery, integration, application, and teaching—and that it connects academics to the outside community. Although this report was written in 1990, these areas hold true today. The categories of scholarship developed by Boyer can be interpreted in various ways and provide a focal point to allow readers to better understand research beyond the traditional scientific type.

An analysis of the nine articles in this issue of the NABTE Review shows that all four areas of scholarship—discovery, integration, application, and teaching—were used. Many of the authors' research also investigated components that are useful to the community outside of academia. The research addresses the needs and the future of business education, work-based initiatives involving students and teachers, business educators' use of the Web in the classroom, and technology skills needed for entry-level workers. Discovery research in the area of testing and validating a career development scale and a study to show factors associated with research productivity of business teacher educators are also included.

The McEwen and the Brown and Swafford studies compliment each other. McEwen surveyed graduates and employers of business teacher education programs to describe a quality teacher preparatory education program, while Brown and Swafford discussed the business education teacher shortage and the implications for employing teachers not graduating from "quality" teacher education programs.

Work-based learning initiatives have become a cornerstone in the educational system to add more focus to career development, and the School-to-Work activities have allowed for federal monies to be used for work-based learning. O'Connor researched school administrators to identify what involvement and benefit there is to the administrators, teachers, students, and parents. Roach, McPherson, Rogers, Wamba, and Rainey's research was more specific as it related to educator externships and the perceptions and attitudes of the educators involved in the work-based experience.

While these two studies look at work-based learning and its effects on career development and choices, Smith tested and validated the use of the Career Development Self-Efficacy Scale. Her study can be used to measure six career self-efficacy factors, and its validation provides demographic information as well as a tool to assist students in planning more effectively for a career.

Henderson and Bartholome surveyed employees to determine workplace and computer literacy skills for entry-level, nonbaccalaureate employees. This study was based on the importance of, current level of, and comparison to the desired levels cited in the Secretary's Commission on Achieving Necessary Skills. Bush and LaBonty researched a specific type of competency for entry-level managerial positions—spreadsheet competencies. This study provides a clear set of spreadsheet competencies that should be addressed in curriculum development.

Alexander's research focuses on identifying the knowledge base and use of Web page technologies in the classroom. Three areas included on the questionnaire were: demographic information, knowledge of Web pages, and use of Web pages.

The research of Bartlett, Kotrlik, Higgins, and Williams investigated numerous variables of business teacher educators as well as the organizational culture. This investigation offers the reader an insight to research productivity and a look at the type of research needed in a college/university environment.

Mary Taylor-Huber (1999) identified the characteristics of scholarship and stated that when people praise a work of scholarship they usually identify a staged sequence of activities, each of which embodies a familiar virtue:

1. Clear goals,
2. Adequate preparation,
3. Appropriate methods,
4. Significant results,
5. Effective presentation, and
6. Reflective critique.

The articles in the 29th issue of the *NABTE Review* exemplify these six characteristics and reflect research for the 21st century.

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Manuscript Preparation Guidelines for the 2004 *NABTE Review*

The *NABTE Review* is a refereed journal published annually in the fall as a separate publication and in the spring as a part of the April issue of *Business Education Forum* by the National Association for Business Teacher Education. Readership consists primarily of business teacher educators, and manuscripts submitted should be of interest to this group. A special honor to an author whose manuscript is accepted for publication will be an award presented at the NABTE business session of the forthcoming NBEA convention.

To publish in the *NABTE Review* at least one of the authors must be a professional member of NBEA, and one of the schools must be an institutional member of NABTE. Submit your manuscript exclusively to the *NABTE Review* editor by August 15, 2003. If the manuscript or a similar one is accepted by another professional journal or if it is readily available from any other professional publication, it cannot be published in the *NABTE Review*. Authors' names will be removed from the manuscript before they are sent to the Review Committee. Each manuscript will be evaluated by at least three members of the Review Committee. The names of reviewers assigned to specific manuscripts will not be revealed. Authors will be notified of the publication decision by December 31 of the year of submission.

The guidelines for manuscript preparation are:

1. Provide content of interest to business teacher educators. See criteria for publication and review below.*
2. Submit title page, abstract, content, and references. Keep the overall length between 3,000 and 4,000 words, although some flexibility in length is permissible.
3. Attach human subject approval forms to the manuscript when required by your institution.
4. Unless noted otherwise here, follow the *Publication Manual of the American Psychological Association* (Fifth edition, 2001, commonly referred to as the *APA Style Manual*) for the overall manuscript, including text, headings, references, and tables.
5. Use DOS/Windows-compatible word processing software (MS Word preferred, 12-point font size), and double space the manuscript. Do not use special table or formatting features for preparation of the manuscript. The simplest possible formatting should be used.
6. Prepare the title page to include the title of the article, your name, school, school address and telephone number, home address and telephone number, e-mail address, and a total word count. Prepare a running head of the first 3-4 words of the title to appear on the title page and all other pages of the manuscript. Avoid identifying yourself, your school, or your state on any page other than the title page.
7. Proofread carefully for errors in grammar, punctuation, and spelling. Except for title pages, manuscripts are sent to the Review Committee in the form they are received.

Submit the following to the editor:

FIVE printed copies of your manuscript. Keep a copy for yourself. The manuscripts will not be returned to authors.

By August 15, 2003, submit your manuscript exclusively to *NABTE Review* Editor Beryl C. McEwen, Department of Business Education, School of Business and Economics, North Carolina AT&T State University, 1601 East Market Street, Greensboro, NC 27411.

If you have any questions, please contact the editor at North Carolina AT&T State University by telephone: (336) 334-7657, ext. 4000, fax: (336) 334-7093, or e-mail: mcewenb@ncat.edu.

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*Criteria for publication and review: To publish in the *NABTE Review* at least one of the authors must be a professional member of NBEA, and one of the schools represented must be an institutional member of NABTE. The Review Committee rates each submission on the following criteria: importance to business teacher educators, relevance and quality of literature review, appropriateness of design and procedures, types of resources/subjects, design and use of instruments, presentation of results/analysis, discussion (conclusions and recommendations), overall clarity and organization of manuscript, and contribution to learning/curriculum improvement.

2002–2003 *NABTE REVIEW* EDITOR

The *NABTE Review* is a periodic publication of the National Association for Business Teacher Education (the Institutional Division of the National Business Education Association), 1914 Association Drive, Reston, VA 20191-1596. All correspondence regarding this issue should be sent to Dr. Wayne A. Moore, Technology Support and Training, Eberly College of Business and Information Technology, Indiana University of Pennsylvania, 664 Pratt Drive, Indiana, PA 15705-1087. No responsibility for the views expressed by the authors is assumed by the editors.

The *NABTE Review* is designed to promote and strengthen business education in colleges and universities, community colleges, and secondary schools through improved business teacher education at the collegiate level.

Quality Business Teacher Education: Perceptions of Graduates and Employers

Beryl C. McEwen, North Carolina A&T State University, Greensboro, North Carolina

ABSTRACT

Forgione (1999) argued that it is necessary to track our progress in improving the quality of classroom teachers. This study sought feedback from graduates and their employers (principals) to assess a business teacher education program.

The results of the study led to the conclusion that both graduates and principals perceive the program to be of very high quality. Graduates are very satisfied with the overall quality of instruction they received and the quality of the academic advisement. Methods of Instruction courses are particularly valuable as are content area courses such as business communication, computer technology, and business law.

Employers also perceived the program to be of high quality, as evidenced by the performance of the graduates in their schools. Program quality is evident in the graduates' strong technical and communication skills, professional characteristics, leadership and management skills, and teaching and evaluation skills.

INTRODUCTION

Business educators are a critical part of America's teaching population. Businesses need employees who are problem solvers, flexible and responsive to ever-changing technology, and who can provide creative and dynamic leadership in a global economy. Business educators are responsible for educating and training these workers. Business educators are also those who give students many of the business and economic skills they need in their personal lives.

The National Association for Business Teacher Education (2001) noted that business teachers are expected to demonstrate specific skills, apply knowledge, and possess professional qualities as a result of their preparation. Business teacher education programs are successful if they prepare graduates who possess these qualities and who can be effective classroom teachers.

Background

The institution involved in the study is a state university in the Southeastern United States. It is an institutional member of the National Association for Business Teacher Education. The business teacher education program is accredited by the National Council for Accreditation of Teacher Education and the State Department of Public Instruction, as part of the teacher education programs. It is also accredited by the AACSB International, as part of the business programs.

The Business Teacher Education Program is a part of the Business School. Business teacher education majors are required to take the same core business classes as all other business majors and to demonstrate mastery of their subject matter by passing the PRAXIS II Content Area Test in Business Education. Ninety-six percent of the 1996-2000 graduates passed the Educational Testing Service (ETS) designed and administered test on their first or second sitting.

The business teacher education curriculum includes approximately 42 hours of general studies courses (math, English, literature, natural science, general psychology, speech, physical education), 58 hours of business content area courses (keyboarding, computer applications, accounting, management, marketing, economics, business law, etc.) and 28 hours of business teacher education and professional education courses (methods of teaching business courses, administration and supervision of business education, philosophical foundations of education, psychological foundations of education, curriculum development, and teaching reading in secondary schools). The program also includes 10 weeks of student teaching during the second semester senior year and a mandatory 400 or more hours of business experience. The Business Teacher Education Program admits first-year and transfer students, and all academic advisement is provided by the department chair and faculty.

PROBLEM AND PURPOSE

The problem being investigated by this study is the following: To what extent is the business teacher education program preparing quality business teachers for the public schools?

The purpose of the study was to assess the extent to which the business teacher education program at a state university in the Southeastern United States is meeting its goal of preparing quality business teachers for the public school system. As such, the study was designed to determine graduates' perceptions of the quality of preparation they received for their jobs and their employers' (principals) evaluations of their performance as business educators.

The study sought answers to the following questions:

1. What are the demographic characteristics of the respondents—1996 to 2000 graduates of a business teacher education program?
2. How do graduates of the business teacher education program perceive the quality of their teacher education preparation?
3. What do graduates of the business teacher education program identify as the major weaknesses of the program?
4. How do employers (principals) view the quality of preparation that these graduates bring to their jobs?

NEED FOR THE STUDY

Business education has changed dramatically over the past decade, mainly due to technology. Changes are most evident in course content, instructional technology, and facilities. Business teacher education can benefit from information on how business teachers and their principals perceive the quality of their preparation for the positions in which they are hired in the middle grades and high schools.

Follow-up studies are an important component of program evaluation and continual improvement. They are designed to evaluate the product of the career program—the graduate (Wentling, 1980). "In addition, very important information regarding the strengths and weaknesses of a program may be gathered from the former students, who are in the best position to judge such characteristics" (Wentling, 1980, p. 140). The information gathered in this study will help to inform the curriculum revision processes in business teacher education. Jorgensen (1979) noted that the follow up of program completers is a major phase of program evaluation.

Further, in a study of business education student teachers, Wiggs and Erthal (1999) found that graduates were very confident that they were prepared for teaching, assessment, and classroom management. However, the researchers recommended that additional research focus on graduates after their first year of teaching.

REVIEW OF LITERATURE

Quality Preparation

The primary purpose of teacher education programs is to prepare quality teachers for the public education system. There is a great deal of discussion about teacher quality. In April 1999, the U.S. Commissioner of Education Statistics for the National Center for Education Statistics testified before the U.S. House of Representative Committee on Education and the Workforce. Referring to the first in a series of biennial reports, *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers*, Forgione (1999) noted that it is necessary to track our progress in improving the quality of classroom teachers. However, measuring teacher quality is very difficult, as there is little consensus on what it is or how to measure it. Despite the lack of consensus on what constitutes teacher quality, most agree that one component is the ability to understand and communicate the subject matter (Forgione, 1999). Further, Forgione (1999) noted that two broad elements typically characterize teacher quality—(1) teacher preparation and qualifications and (2) teaching practices.

He also noted that high-quality teachers must be capable and willing to continue to learn and relearn their trade. He recommended continued learning, such as through professional development, as a way for educators to build capacity for teaching effectiveness. This is particularly necessary in business education where the discipline is continually evolving and changing. High quality teachers also know how to address the needs of a diverse student population, effectively use educational technology, implement curriculum and performance standards, and use a variety of new and proven teaching methodologies.

One of the primary concerns of current teacher preparation programs is that many graduates lack subject matter competence (National Council on Teacher Quality, 2001). They underscored the importance of subject-matter knowledge and argued that prospective teachers should be required to demonstrate mastery of the subject area before being allowed to teach it. In fact, they recommended that teacher candidates take the same core classes in the subject area they plan to teach as those who major in those fields.

Job Requirement of Business Teachers

Business teacher education programs prepare graduates for positions in the public school system at the middle grades and high school levels. Some of these teachers also enter private high schools. Teaching at the community college or the university level requires a graduate education at the master's degree and doctoral level, respectively.

As business teachers at the middle grades or high school levels, graduates will be required to prepare students for entry-level jobs in the world of business as well as to provide them with basic economic skills for life and good citizenship. This involves teaching knowledge, attitudes, and applications related to business courses; assessing instruction and maintaining records for accountability; providing support for extracurricular activities; and managing the classroom and broader school environment. The twelve curricular areas that were identified by the National Business Education Association (1995), in the National Standards for Business Education (NSBE) are accounting, business law, career development, communications, computation, economics and personal finance, entrepreneurship, information systems, international business, inter-relationships of business functions, marketing, and management. These are the areas in which the graduates of business teacher education must be prepared to teach. These are the areas in which they must develop content area competence. As the NSBE curriculum model shows, the job market will require that graduates of business teacher education programs have strong technology skills, communication skills, human relations skills, quantitative skills, and global business skills.

Satisfaction with Business Teacher Education Program

Jennings (1999) found that American public school teachers have many of the basic prerequisites for teaching, with most having a bachelor's degree and certification in their teaching field. Most also have their main teaching assignment in the field of their undergraduate or master's degree. However, he also found that generally they do not feel themselves to be well prepared to teach, with fewer than half of them reporting that they are well prepared to implement new teaching methods. Less than a third of the teachers felt adept at using student-performance assessment techniques and only about 20 percent felt ready to integrate educational technology or to respond to the needs of disabled students, culturally diverse students, or those with limited English proficiency.

Focusing specifically on business teacher education, Wiggs and Erthal (1999) found that student teachers felt very well prepared in the four NABTE standard areas of instruction (instruction, assessment, management, and subject competencies). They felt confident to teach the constantly changing subject matter, to assess student progress and to alter the learning environment to optimize student learning. They are able to practice effective classroom management and are able to teach a broad range of introductory business courses. However, the student teachers in the sample felt less confident about their preparedness to integrate the Internet in their instruction, to teach low-ability students, to develop cooperative learning groups, and to develop portfolio assignments.

RESEARCH METHODOLOGY

Subjects. This study involved the entire population of 24 business teacher education graduates, from May 1996 to May 2000. They are all licensed business educators, with at least a bachelor's degree in Business Education. The employers of the graduates (12 principals) were also included in the study. Because of the rapid turnover of principals, only the principals of graduates who are currently working as business educators were included in the study.

Data Collection and Analysis. A simple survey instrument was developed to collect data from graduates. The instrument collected demographic data and used a rating scale and open-ended questions to gather information on the quality of the preparation they received as business teacher education majors. The five-point rating scale ranged from Excellent—5, Above Average—4; Average—3, Below Average—2, to Far Below Average—1. The survey also included a request for permission to survey their principals.

Principals were later sent a simple Likert-type scale and asked to rate the graduates' performance in their jobs as business teachers. The five-point scale ranged from Excellent—5, Good—4, Average—3, Fair—2, to Poor—1.

A small group of colleagues in business teacher education throughout the state reviewed the instruments and provided feedback that led to some modifications. The Institutional Review Board of the campus then reviewed the instruments and approved them.

The use of the basic mailed survey is supported by the Academy for Educational Development and the Educational Development Center, Inc. (2001), which stated that surveys are a useful tool for collecting quantitative data. They are particularly useful for gathering information that describes the nature and extent of a specific issue or problem. NCS Pearson, Inc. (1996) also noted that respondents consider mailed surveys to be less intrusive than telephone surveys. They are also believed to offer more confidentiality and anonymity.

The data gathered through this mailed survey were analyzed using descriptive statistics and a one-way Analysis of Variance (ANOVA). The results are displayed in tables.

FINDINGS

Data for the study were obtained from 18 of the 24 graduates in the population, resulting in a 75% response rate. A separate survey was mailed to all 12 principals, resulting in 10 responses—a response rate of 83%. The results are presented in relation to the research questions.

Demographic Characteristics of the Respondents

Table 1 displays the demographic characteristics of the respondents. The female to male ratio was 2:1. Sixty percent of the graduates are earning more than $30,000. Over one-third of the graduates have had three jobs since graduation, though the maximum number of years they could have been employed was five years. Twenty-four percent have had at least one promotion, 44% have had advanced training beyond the bachelor's degree, and 28% have earned advanced degrees.

Table 1. Demographic Characteristics of the Sample (N=18)

Demographics		Frequency	Relative Frequency
Gender	Male	6	33%
	Female	12	67%
Salary	<$20,000.00	1	6%
	$20,000.00-$25,000.00	3	17%
	$25,000.00-$30,000.00	3	17%
	$30,000.00-$35,000.00	6	32%
	>$35,000.00	5	28%
Jobs Since Graduation	1 job	3	17%
	2 jobs	8	44%
	3 jobs	7	38%
Promotions Since Graduation	No promotion	14	76%
	One promotion	3	18%
	Two promotions	1	6%
Advanced Training	Yes	8	44%
	No	10	56%
Advanced Degrees	Yes	5	28%
	No	13	72%

Program Quality—Graduates' Views

Overall Program. Table 2 ranks graduates' ratings of various elements of the Business Teacher Education Program. All items received a mean score that is greater than 4.0 on a five-point scale with a score of five as excellent. The highest score was for Academic Advisement (Mean = 4.83), followed by Business Education Methods Courses (Mean = 4.61). The lowest score was for Business Work Experience (Mean = 4.11). The overall program received a mean score of 4.41.

Table 2. Quality of Business Teacher Education Program—Graduates' Perceptions (N=18)

Item	Mean	Standard Deviation
Academic Advisement	4.83	0.38
Business Education Methods Courses	4.61	0.61
Curriculum	4.44	0.62
Content Area Courses	4.44	0.70
Professional Development	4.28	0.62
General Education Courses	4.17	0.71
Business Work Experience	4.11	0.83
Overall Rating	**4.41**	**0.25**

Courses. Table 3 shows those courses that graduates identified as most valuable for them professionally. The two methods courses (56% and 33%, respectively) were considered to be very valuable, together with Microcomputer Usage in Business (44%) and Business Communication (28%). Student teaching (a six-credit hour teaching internship) was also considered very valuable by the graduates (28%).

Table 4 shows the courses that graduates have found to be most helpful in their personal lives. The most valuable are Business Communication (44%), Microcomputer Usage in Business (28%), and Legal Environment of Business (22%).

Table 3. Most Valuable Courses for Employment (N=18)

Courses	Frequency	Relative Frequency
Methods of Teaching Business Subjects	10	56%
Microcomputer Usage in Business (software training)	8	44%
Administration and Supervision of Business Education	6	33%
Business Communication	5	28%
Student Teaching	5	28%
Management Concepts	3	17%
Keyboarding	2	11%
Educational Psychology	2	11%
Teaching Reading in the Secondary Schools	2	11%
Introduction to Management Information Systems	2	11%
Principles and Curricula of Secondary Schools	2	11%
Micro and Macro Economics	1	6%
Marketing Concepts	1	6%
Accounting	1	6%
Directed Work Experience	1	6%
Business Finance	1	6%
Principles of Education	1	6%
Money and Banking (economics course)	1	6%

Table 4. Courses Most Valuable for Personal Use

Courses	Frequency	Relative Frequency
Business Communication	8	44%
Microcomputer Usage in Business (computer software)	5	28%
Legal Environment of Business	4	22%
Keyboarding	3	17%
Accounting	3	17%
Business Finance	3	17%
Management	3	17%
Money and Banking	2	11%
Economics	2	11%
Marketing	2	11%
Speech	1	6%
Methods of Teaching Business Subjects	1	6%
Administration and Supervision of Business Education	1	6%
Business Programming	1	6%
Mathematics	1	6%
Student Teaching	1	6%
Entrepreneurship	1	6%
Introduction to Management Information Systems	1	6%
National Income Analysis	1	6%
Psychology	1	6%

Other Program Elements. Other elements of the Business Education program that graduates identified as being valuable to them professionally are listed in Table 5. The most important ones were "quality of instruction" (67%) and "academic advisement " (50%). They also place value on social activities such as is provided through clubs and student organizations (22%).

Table 5. Other Program Elements Graduates Identified as Professionally Valuable (N=18)

Program Components	Frequency	Relative Frequency
Quality of instruction	12	67%
Academic advisement from professors	9	50%
Communication between students and Department Chair	5	28%
Clubs and organizations/Social activities	4	22%
Quality administration and support staff	3	17%
Opportunities for internships and conferences	2	11%
Strong Department Chair and instructors	2	11%

Areas Needing Improvement

Graduates would like to see several courses added to the curriculum. They are shown in Table 6. Topping the list is more courses in computer technology (50%), including Web page design (22%). Students would also like to see a course in entrepreneurship (11%).

Other suggestions for program improvements are shown in Table 7. These include the need for more computer courses (11%), more up-to-date computer labs (11%), more opportunities for internships and other professional encounters (11%), improved advisement (11%), and class size (11%).

Table 6. Suggestions for Additional Coursework (N=18)

Courses	Frequency	Relative Frequency
More computer technology (e.g. Visual BASIC, E-commerce, Network Administration, Desktop Publishing, HTML)	9	50%
Web Page Design	4	22%
Entrepreneurship (starting your own business)	2	11%
Testing and Measurement	1	6%
Leadership Seminar	1	6%
Foreign Languages	1	6%
International Business	1	6%

Table 7. Major Program Weaknesses Identified by Graduates (N = 18)

Weaknesses	Frequency	Relative Frequency
Not enough computer training (e.g. spreadsheets, PowerPoint, Internet, Visual BASIC, HTML, Adobe PageMaker)	2	11%
Needs more up-to-date computer labs	2	11%
Needs more coordination with the Business School to get business education students more opportunities for internships and other professional encounters.	2	11%
Lack of advisement/concern (1995 and 1996 graduates).	2	11%
Not many Business Education majors/very small classes	2	11%
Need more programming courses	1	6%
Not enough organized activities as a department, i.e. social outings, guest speakers, etc.	1	6%
Needs stronger training and development focus	1	6%

Table 8. Quality of Teacher Preparation—Employer Ratings (N=10)

Item	Mean	SD
Professionalism (demonstrates professional behavior)	5	0
Ethical work behavior	4.9	.32
Computer skills	4.9	.32
Demonstrating mastery of the content being taught	4.8	.42
Using technology to enhance teaching and learning	4.8	.42
Team player (works as a team member)	4.7	.48
Response to supervision	4.7	.48
Facilitating instead of directing learning	4.6	.52
Flexibility (adapts quickly to changes)	4.6	.52
Management skills	4.5	.71
Goal-oriented (sets and works towards goals)	4.5	.71
Potential for professional advancement with LEA	4.4	.70
Human relations skills	4.4	.52
Planning and organizing skills	4.4	.52
Classroom management and discipline	4.4	.70
Tolerance for student differences	4.4	.70
Critical thinking skills	4.3	.67
Evaluations of teaching and learning	4.3	.48
Providing positive reinforcement	4.3	.67
Showing enthusiasm through voice, actions, and preparation	4.3	.82
Demonstrating pedagogical practices that reflect current research on best practices	4.3	.67
Oral communication skills	4.2	.63
Listening skills	4.2	.63
Participating in professional growth activities	4.2	.63
Written communication skills	4.1	.57
Reliability (follows through on assignments)	4.1	.67
Problem solving skills	4.1	.57
Creativity (generates creative alternatives)	4.1	.74
Planning for individual needs of students	4.1	.32
Sharing and seeking professional materials and ideas	4.1	.74
Teaching activities reflect understanding of prerequisite knowledge and relationships	4.1	.57
Leadership skills (functions in leadership roles)	4.0	.67
Asking thought-provoking questions	4.0	.47
Diagnosing student achievement and prescribing appropriate learning activities	4.0	.47
Using a variety of appropriate teaching and evaluation methods	4.0	.47

Quality of Teacher Preparation—Principals' Views

Principals were asked to rate each of the program graduates. Table 8 shows the ranking of means and standard deviation for each item on the rating scale. As shown in the table, graduates' job performance was rated 4.5 or better on 12 of the 34 items on the scale. Their highest scores were on professionalism (mean = 5.0), ethics (mean = 4.9), and computer skills (mean = 4.9). Their lowest scores were for leadership skills, asking thought-provoking questions, diagnosing student achievement and prescribing appropriate learning activities, and using a variety of appropriate teaching and evaluation methods.

Table 9 shows the key areas of strength that principals identified in graduates of the program. The group means and standard deviations show that the strongest areas of preparation are "professionalism" and "technical and communication skills." Each program element was rated as satisfactory (mean of 4.0 or higher).

The results of a one-way Analysis of Variance (ANOVA) showed no significant differences in the ratings that graduates received in the four performance areas (Table 10). Using the P>.05 as the acceptable level of significance, graduates received similar quality of training in each of the four areas listed in Table 9. However, the means for "professionalism" and "technical and communication skills" are somewhat higher than the means for "leadership and management skills" and "teaching and evaluation."

CONCLUSIONS AND DISCUSSION

The following conclusions can be drawn from the findings of the study:

1. Current business education teachers are predominantly females who value continuing education. Approximately 40% are pursuing advanced degrees, and 28% have already completed the master's degree in the five years since graduation. Generally, their salaries compare well with the average salaries for teachers (Nelson, Drown, and Gould, 2000) and are above the basic rates offered to beginning teachers in most of the 50 states. The graduates' commitment to continual professional development speaks well for the quality of business education.

Table 9. Quality of Teacher Preparation in Key Areas

Item	Mean	SD
Technical and Communication Skills		
Computer skills	4.9	.32
Demonstrating mastery of the content being taught	4.8	.42
Oral communication skills	4.2	.63
Listening skills	4.2	.63
Written communication skills	4.1	.57
Group Mean	**4.4**	**.38**
Teaching and Evaluating		
Using technology to enhance teaching and learning	4.8	.42
Facilitating instead of directing learning	4.6	.52
Classroom management and discipline	4.4	.70
Tolerance for student differences	4.4	.70
Evaluations of teaching and learning	4.3	.48
Providing positive reinforcement	4.3	.67
Showing enthusiasm through voice, actions, and preparation	4.3	.82
Demonstrating pedagogical practices that reflect current research on best practices	4.3	.67
Planning for individual needs of students	4.1	.32
Teaching activities reflect understanding of prerequisite knowledge and relationships	4.1	.57
Diagnosing student achievement and prescribing appropriate learning activities	4.0	.47
Asking thought-provoking questions	4.0	.47
Using a variety of appropriate teaching and evaluation methods	4.0	.47
Group Mean	**4.3**	**.20**
Leadership/Management Skills		
Management skills	4.5	.71
Goal-oriented (sets and works towards goals)	4.5	.71
Human relations skills	4.4	.52
Planning and organizing skills	4.4	.52
Critical thinking skills	4.3	.67
Problem solving skills	4.1	.57
Creativity (generates creative alternatives)	4.1	.74
Leadership skills (functions in leadership roles)	4.0	.67
Group Mean	**4.3**	**.30**
Professionalism		
Professionalism (demonstrates professional behavior)	5	0
Ethical work behavior	4.9	.32
Team player (works as a team member)	4.7	.48
Response to supervision	4.7	.48
Flexibility (adapts quickly to changes)	4.6	.52
Participating in professional growth activities	4.2	.63
Reliability (follows through on assignments)	4.1	.67
Sharing and seeking professional materials and ideas	4.1	.74
Group Mean	**4.6**	**.25**

Table 10. ANOVA for Employers' Rating of Graduates' Performance

Sources of Variance	df	Sum of Squares	Variance	F	P
Between Groups	3	0.6242	0.2081	2.7651	0.0591
Within Groups	30	2.2576	0.0753		
TOTAL	33	2.8818			

Performance Areas	Mean Scores	SD
Professionalism	4.59	0.302
Technical and Communication Skills	4.44	0.378
Leadership and Management Skills	4.29	0.296
Teaching and Evaluation	4.27	0.250

2. Graduates perceive their Business Teacher Education program to be of very high quality. They consider the Methods of Instruction courses to be a critical part of a quality business teacher education program. This conclusion supports similar findings by Hedrick and Graves (1990) and Gades and Everett (1992). They reported that most students were satisfied with their preparation in teaching methods. Despite graduates' satisfaction, there is still room for improvement. Students would like to see more courses that will enhance computer technology skills.
3. Graduates were equally satisfied with several other elements of the program, such as the quality of instruction, the support they receive through academic advisement, and the collegiality they experience in student organizations. They also value the student teaching experience. This is consistent with an earlier study by McEwen and King (1998), which found that many student teachers consider student teaching to be the most valuable part of their preservice teacher education.
4. The content area (business) courses are important to a quality Business Teacher Education curriculum because they add both professional and personal value for graduates. Especially important are communication skills, computer technology skills, and business law. This is consistent with the view that a critical component of teacher quality is subject matter competence (Forgione, 1999).
5. The major program weaknesses are insufficient computer training and inadequate computer facilities. This conclusion supports findings by Redmann, Kotrlik, Harrison, and Handley (1999) that secondary business teachers value information technology but have inadequate information technology knowledge and skills.
6. Employers are very satisfied with the quality of training graduates received in business teacher education, as evidenced by their job performance. This was reflected in the high ratings that graduates received on the performance scale. Average ratings of better than four on a five-point scale suggests that employers think graduates were doing a good to excellent job in the classroom.
7. Graduates were consistently well prepared for their jobs. The fact that the Analysis of Variance (ANOVA) found no significant difference in the ratings on the various sub-areas of the performance scale, and all the means are better than 4.0, suggest that graduates are satisfied with their preparation and have been performing very well in all aspects of their jobs. Employers consider the graduates to have excellent job preparation skills, including technical and communication skills, professional characteristics and behaviors, leadership and management skills, and teaching and evaluation skills.

RECOMMENDATIONS AND IMPLICATIONS

The findings of this study support the general conclusion that the business teacher education program does a good job in preparing graduates for their careers as business educators at the middle grades and secondary level. However, it is important to remind readers that the size of the population for this study limits its generalizability. It does, however, point to some specific strengths and weaknesses of the business teacher education program; therefore it provides a useful framework for other business teacher education programs as they engage in their continuous improvement efforts. The study offers the following recommendations:

1. Business teacher education should continue to make strong efforts to recruit top quality candidates into business education. The literature does support the view that the demand for business teachers far exceeds the supply. Further, business teacher education programs should position themselves to support teachers beyond graduation as many value continuous learning and advanced degrees.
2. As business teacher education programs are downsized or merged with other program areas, it is important to preserve the methods courses, as they are a valuable component of business teacher preparation. It is unlikely that general methods courses will do an equally good job of preparing business teachers for the classroom.
3. A strong content base is necessary for good teaching. It is very important to ensure that the business teacher education curriculum includes a very strong complement of business courses. Ideally, these should be the same business core courses that are required for all business majors. As Forgione (1999) noted, one critical component of quality teacher education is subject matter competence. A strong content area base is also directly linked to success on the PRAXIS or other licensure exam, without which graduates are typically paid lower starting salaries. They are also very useful to students in their personal lives.
4. Faculty engaged in business teacher education need to make a special effort to model the types of instructional methods that they consider effective in teaching business courses. Students value excellent instruction and will often attempt to teach as they were taught. McEwen (1996) found that teachers often teach computer courses the way they were taught.
5. Every effort should be made to keep computer facilities up to date and to include in the curriculum courses that teach the most current applications and technologies. Computer applications are among the most popular business courses, and students who are not well prepared in computer skills will probably feel inadequate as they begin their careers.
6. Internships should be chosen above part-time jobs as the preferred means of meeting the work experience component that is required in most business teacher education programs. Internships place the students in the workplace, fulltime, for eight to ten weeks. This provides a better quality learning experience than most part-time positions that are held while completing classes on campus during the regular semester. Business teacher education programs should make efforts to provide summer internships that are similar to those offered to other business majors.
7. Additional research should focus on a larger population of graduates and employers, though it will probably mean collaborating with colleagues in several programs and states. This will provide more data and therefore a broader perspective of the quality of business teacher education programs. And, most importantly, the feedback provided by graduates and employers should be used to drive continuous curricula improvement efforts.

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Educator Externships: A View from the Trenches

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ABSTRACT

The purpose of this study was to ascertain the perceptions and attitudes of school personnel toward educator externships. Specifically, the study was designed to learn what effect the externship experience had on teaching student workplace skills, teaching methodologies, and in developing course curriculum.

A list of 285 educators was complied from data supplied by the coordinators of two School-to-Work consortiums that identified externs. For purposes of this study, an externship is a cooperative agreement between an educator and a business or industry in which the educator will work for that business to gain work experience; then, this educator will transfer his or her work experience into teaching methods and curriculum.

Participants in the study perceived that their externship experience had a positive effect on their school responsibilities and had improved their teaching or school responsibilities, but had not impacted their teaching methods in the areas of test preparation, workbooks and exercises. Externs perceived increased knowledge of workplace skills as a result of their externship experiences.

Schools across the nation are in the midst of educational reform. As such, many opportunities and strategies are being developed to improve the quality of education in kindergarten through twelfth grade. Additionally, teacher education preparation has become increasingly important as noted by Lee Doyle, Director of Corporate Affairs for BellSouth (1998), who said, "The most effective and productive investments we can make to build future capacity is to invest in teachers—especially when it comes to preparing students for the world of work" (p.1). Teacher training is essential. "The more work-related skills students learn in today's classrooms, the better prepared they will be to assume positions in tomorrow's workforce. But teachers can't teach what they haven't experienced and don't understand" (Doyle, 1998, p. 1). The case for focusing on teacher training is driven by new evidence that students' academic achievement is advanced by work-based learning experiences.

L. Allen Phelps (1998) stated that since many of today's teachers have lacked opportunities to understand the qualities and richness of learning outside of school, a substantial national effort is emerging to support educators' workplace learning. Since the enactment of the School-to-Work Opportunities Act of 1994, educator externship programs have increased progressively across the nation. An "externship" is generally defined as an opportunity for educators to get experience working in businesses, industries, and service organizations in order to expand and enhance the educators' understanding of the world of work. In addition, externships provide educators opportunities to get needed work experiences while maintaining teaching contracts. Consequently, a teacher can take summer leave (or other agreed work leave) to enter the workforce to gain experiences "on the job" that can be transferred to the classroom.

Educators have stated many benefits as a result of completing externships. Most externs state that they learn "cutting-edge" skills that they can teach in the classroom. Externs hear from employers of the necessity to teach students verbal and written communication skills and responsibility. Educators and employers have stated that externships open and maintain lines of communication between business and education, and valuable resources are gained.

Federal and state funding for externships in the State of Wisconsin has been channeled through 15 Tech Prep/School-to-Work consortiums. The Blackhawk Technical College Tech Prep/School-to-Work Consortium and the Gateway Technical College Tech Prep/School-to-Work Consortium have funded externships since 1995.

PURPOSE OF THE STUDY

A five-member research team chose to investigate the value of educator externships. The purpose of this study was to ascertain the perceptions and attitudes of school personnel toward educator externships. Specifically, what effect did the externship experience have on student workplace skills, teaching methodology, and course curriculum? This study was designed to answer the following research questions:

1. How has the externship experience affected the educator's teaching or school responsibilities?
2. What knowledge of workplace skills that are needed by today's worker was gained through the externship experience?

3. What curriculum changes were made as a result of the externship experience?
4. Did the externship experience result in any changes in teaching methods employed in the classroom?
5. Did the extern achieve greater understanding of technological advances in business and industry, diversity, workplace competencies, current occupations, and classroom-business resources and partnerships?

LITERATURE REVIEW

Research indicates that student achievement is increased when educators develop authentic and relevant instruction (Hearn & Moos, 1978). To create relevant instruction, educators need current, real-world experiences. Consequently, through the School-to-Work Opportunities Act of 1994, educators and school administrations are addressing the critical need to produce closer connections between education and the workplace. School-to-Work legislation was intended to give teachers, counselors, and administrators opportunities to work in related business operations with the objective to bring students essential information regarding today's workplace. Clearly, educators who have gained current, relevant work experience through an externship would be better able to provide that link of articulation between the classroom and the workplace.

Externship programs were developed with the understanding that many of today's teachers lack the opportunity to experience the qualities and richness of learning outside of school. The emerging national agenda is characterized by new professional preparation standards as well as insights about educators' workplace learning and its central importance to new school initiatives. New standards for certifying both beginning and accomplished teachers emphasize the critical connections that educators must have with employees, community leaders, and local government agencies if students are to leave high school with the ability and capacity to apply their learning to real-world situations. Evidence from the nation's leading examples of high quality school-to-work programs indicate professional development and teachers' connections to workplaces and employers, which are the foundations for program development and implementation. Although the word externship is new, the concept is old. A 1996 survey by the National Society for Experiential Education (NSEE) reports the following.

> We learned that for over fifty years American businesses have welcomed individual academic and vocational educators into their workplaces for the summer, for periods ranging from one-day job shadowing experience to eight-week industrial fellowships. We found that the body of knowledge surrounding these programs is typically casual and unstructured and that it has been difficult to show measurable impact for students. (Doyle, 1998, p. 2)

Teacher externships provide teachers with work experiences in a local business or service organization in order to increase their knowledge of curriculum content. Through a variety of work-based learning opportunities, externship programs put faculty in touch with the "real world," develop career awareness in various industries, and update skills and knowledge in selected occupational areas. Through partnership with business and industry, work-based learning serves as a vehicle for linking community groups, government agencies, businesses, and educational institutions and enhancing the preparation of both students and educators. These work-based learning opportunities include two types of experiences: (1) fellowship and internship programs that provide structured work-based learning opportunities; and (2) short-term professional development opportunities, including job shadowing experiences, visitation programs, and other experiences providing brief exposure to workplace activities.

The State of Wisconsin was one of the first eight states to receive federal funding under the School-to-Work Act of 1994 for school-to-work initiatives. Seeing the increased interest and success of externships, the Wisconsin Department of Public Instruction created a model for educator externships. "The primary purpose of an externship is to influence those who write, promote, or support curricula to make curricular changes that will help students make connections between school, work, and the community" (Colussy, 1999, p. 1).

METHODOLOGY

This research investigated the value of educator externships.

Description of the Study

The research team decided to implement a quantitative, descriptive research design using survey methods. The design was a cross-sectional survey.

Population

The primary units for analysis were elementary, middle, secondary school and technical college teachers, counselors, specialists, and administrators from the Blackhawk Technical College Tech Prep/School-to-Work Consortium and the Gateway Technical College Tech Prep/School-to-Work Consortium. A list of 285 educators was compiled from data supplied by the School-to-Work coordinators of the two consortiums identifying externs. Externs chose to work from a variety of possible work sites including retail/manufacturing businesses, construction sites, engineering firms, hospitals, police departments, newspaper companies, radio and broadcasting companies, social services, or veterinary clinics.

Selection of Subjects

Subject selection was based upon one sampling frame. All subjects identified by the two consortiums (Blackhawk Technical College and Gateway Technical College) and their School-to-Work coordinators were chosen as participants in this study.

Instrument

The research team discussed the development of the data collection instrument. A pilot questionnaire was finalized and mailed to 20 individuals who had completed an externship and were randomly selected to receive the pilot questionnaire. One survey was returned with no forwarding address. Of the remaining 19 surveys, eight were returned, resulting in a 42% response to the pilot questionnaire.

Based on the responses to the pilot questionnaire, revisions were made and a three-page questionnaire entitled "Survey of Educator Externships" was developed. The questions addressed topics as to the kind of work performed, the work's value to education, and the importance of educators completing an externship.

Data Collection

The data used in this descriptive study were collected using standard mail survey procedures as described by Dillman (1978). Each of the potential participants received a survey packet containing the following items: (1) a cover letter describing the study and outlining the procedures to be followed in completing the questionnaire; (2) a three-page questionnaire, which involved demographic information and perceptions about the externship experience; and (3) a self-addressed stamped envelope.

The survey packet was mailed to 285 participants. Using Dillman's total design method, a response rate of 50% or more was anticipated.

FINDINGS

A total of 285 survey questionnaires were mailed to educators who had completed externships between 1995 and 1998. Of the 285 questionnaires sent, six were unusable due to mailing problems. Of the remaining 279 questionnaires, 121 responses were received, resulting in a 43% response rate. No follow up was conducted.

Participants were asked to indicate how their externships had an effect on their responsibilities as educators. Most of the participants perceived that their externship "greatly contributed" or "somewhat contributed" to their school responsibilities, 37.2% and 48.0%, respectively. Sixteen (13.2%) educators marked "minimally contributed," with one response indicating "not contributed" and one marking "N/A" in affecting their school responsibilities. See Table 1.

When asked how the number of hours worked affected their teaching or school responsibilities, externs who worked ten or fewer hours rated their externship as somewhat contributing to their teaching or school responsibility. Externs who worked between 11 to 20 hours mostly perceived their externship experience as greatly contributing or somewhat contributing (47.4% and 36.8%, respectively). Likewise, similar responses were given by externs who worked between 21 and 30 hours (44.4% and 55.6%, respectively). The largest number of externs worked between 31 to 40 hours and mostly perceived their externship experience as somewhat contributing (52.8%), with 27.8% reporting that it "greatly contributed." More than a majority of externs working in excess of 40 hours indicated that this externship "greatly contributed" to their teaching or school responsibilities. See Table 2.

Table 1. Effect of Externship on School Responsibilities

Contribution	Number	Percent
Greatly Contributed	45	37.2%
Somewhat Contributed	58	48.0%
Minimally Contributed	16	13.2%
Not Contributed	1	.8%
N/A	1	.8%
Totals	121	100.0%

Table 2. Comparison of Hours Worked and Effect on Teaching or School Responsibility

Hours Worked	Greatly Contributed	Somewhat Contributed	Minimally Contributed	Not Contributed	N/A	Number
1 - 10	0	2 (100%)	0	0	0	2 (100%)
11 - 20	9 (47.4%)	7 (36.8%)	3 (15.8%)	0	0	19 (100%)
21 - 30	4 (44.4%)	5 (55.6%)	0	0	0	9 (100%)
31 - 40	20 (27.8%)	38 (52.8%)	12 (16.6%)	1 (1.4%)	1 (1.4%)	72 (100%)
40+	12 (63.1%)	6 (31.6%)	1 (5.3%)	0	0	19 (100%)

Participants in this research study were asked what affect their externships had on the improvement of teaching or school responsibilities. Most externs indicated that their externships greatly contributed (34.5%) or somewhat contributed (48.7%) to improving their teaching or school responsibilities. Sixteen externs perceived that their externship experience only minimally contributed. Two externs marked "Not contributed," two marked "N/A," and two participants did not answer this question. See Table 3.

Table 3. Effect of Externship on Improvement of Teaching or School Responsibility

Improvement	Number	Percent
Greatly Contributed	41	34.5%
Somewhat Contributed	58	48.7%
Minimally Contributed	16	13.4%
Not Contributed	2	1.7%
N/A	2	1.7%
Totals	119*	100.0%

The externs work experiences were compared with their perceptions of how their workplace activities affected their teaching or school responsibility. More than half (51.9%) of externs who had observational type experiences felt that their externship contributed somewhat to their school responsibility, while16 educators (29.6%) felt that their externship greatly contributed to the improvement of their teaching or school responsibility. Only eight externs (14.8%) indicated that the experience minimally contributed. See Table 4.

Most externs who worked at the work site getting direct "hands-on" experience rated their experiences as somewhat contributed (48.3%) or greatly contributed (34.5%) to the improvement of their teaching or school responsibility. Only three externs (10.3%) indicated their externship minimally contributed, and two externs stated that their experiences did not contribute to their teaching or school responsibility. See Table 4.

Likewise, almost all the externs who did a combination of observation and hands-on experiences at the work site perceived that their externship contributed "somewhat" (45.5%) or "greatly" (42.4%) to what they do as educators. Only three externs (9.1%) in this category felt that their experiences minimally contributed to the improvement of their teaching or school responsibility. See Table 4.

Table 4. Comparison of Workplace Activities and Improvement of Teaching or School Responsibility

Workplace Activities	Greatly Contributed	Somewhat Contributed	Minimally Contributed	Not Contributed	N/A	Number
Observational	16	28	8	0	2	54
Percent	(29.6%)	(51.9%)	(14.8%)	0	(3.7%)	(100%)
Hands-On	10	14	3	2	0	29
Percent	(34.5%)	(48.3%)	(10.3%)	(6.9%)	0	(100%)
Observation and Hands-On	14	15	3	0	1	33
Percent	(42.4%)	(45.5%)	(9.1%)	(0%)	(3%)	(100%)
Insufficient Information	1	1	2	0	1	5
Totals	41	58	16	2	4	121

Participants were asked to list three significant or relevant ways their externships had an effect on their teaching and school responsibilities. For reporting purposes their responses were grouped into the following categories: workplace competencies and skills; human relations skills; employment contacts, business relationships, and resources; current information and actual workplace situation examples; validating instruction; career planning; and understanding business organizations. These categories and their responses are found in Appendix A. All participants indicated that the value and merits of their externships were well worth the efforts. The externships did provide valuable experiences and workplace information to help make the participants better teachers.

Participants were asked to identify the areas their externship experiences increased their knowledge of workplace skills that were needed by today's workers. Externs could check all skills that applied, which resulted in 1,063 total responses. The top three workplace skills identified by participants were teamwork, interpersonal skills, and problem solving (N=121, 86.0%, 83.5%, and 81.8%, respectively). Closely following were listening skills (78.5%), organizational effectiveness (75.2%), and oral communication skills (72.7%). A majority of the participants (60.3%) indicated motivation skills, and also receiving many responses were creative thinking (56.2%), personal/career development (53.7%), goal setting (50.4%), leadership (46.3%), reading (43.0%), computation (38.8%), and writing skills (38.0%). Other skills identified by participants were computer literacy, initiative, foreign language, time management, and telephone skills. See Table 5.

A comparison was made of the perceptions of educators as to whether their externship experience provided opportunities that could be transferred to their curriculum. Participants could select all elements that applied, which resulted in a total of 352 instruction elements selected. A majority of participants indicated increased opportunity to use new learning objectives (55.4%), work-based learning (52.9%), and hands-on activities (51.2%) in their teaching. Participants indicated greater opportunity for lesson plans, unit plans, teaching methods and styles, and study guides as a result of their externship experiences. Some educators mentioned career information, career awareness, and interpersonal skills could be used in their curricula. See Table 6.

Educators were asked to identify teaching methods that were impacted by their externship experience. Since participants could check all that applied, a total of 468 methods received responses. Team/group activities (52.1%) and problem solving (51.2%) received the most responses to this query. Also receiving many responses were small group discussion, projects, and lecture (45.5%, 35.5%, and 31.4%, respectively). Educators indicated that demonstrations, written reports, role playing, field trips, simulations, audiovisual presentations, and oral reports were somewhat impacted by their externship experience. See Table 7.

Table 5. Increased Knowledge of Workplace Skills as a Result of Externship Experience

Skills	Number	Percent
Teamwork	104	86.0%
Interpersonal skills	101	83.5%
Problem solving	99	81.8%
Listening skills	95	78.5%
Organizational effectiveness	91	75.2%
Oral communication skills	88	72.7%
Motivation	73	60.3%
Creative thinking	68	56.2%
Personal/career development	65	53.7%
Goal Setting	61	50.4%
Leadership	56	46.3%
Reading	52	43.0%
Computation	47	38.8%
Writing	46	38.0%
Other	17	14.1%
Total	1,063*	

*Participants checked all that applied.

A resounding number of participants, 104 or 86.0%, indicated that as a result of their externship, they had greater recognition of workplace competencies and behaviors. Similarly, 101 externs (83.5%) indicted greater recognition in connecting school to business. Eighty-five educators (81.2%)

Table 6. Curriculum Impacted by Externship

Instruction Elements	Number	Percent
Learning objectives	67	55.4%
Work-based learning	64	52.9%
Hands-on activities	62	51.2%
Lesson plans	41	33.9%
Unit plans	28	23.1%
Teaching methods	28	23.1%
Teaching styles	24	19.8%
Study guides	9	7.4%
Other	6	5.0%
Total	352*	

Table 7. Teaching Methodology Impacted by Externship

Methodology	Number	Percent
Team/group activities	63	52.1%
Problem solving	62	51.2%
Small group discussion	55	45.5%
Projects	43	35.5%
Lecture	38	31.4%
Demonstrations	32	26.5%
Written reports	28	23.1%
Role playing	27	22.3%
Field trips	24	19.8%
Simulations	23	19.0%
Audiovisual presentations	21	17.4%
Oral reports	18	14.9%
Test preparation	10	8.3%
Educational games	9	7.4%
Other	9	7.4%
Workbooks and exercises	6	5.0%
Total	468*	

*Participants checked all that applied.

realized the importance of networking with business, and 91 (75.2%) gained insight in current information and technological advances. More than a majority of externs perceived that their externship brought about greater recognition of the vast array of occupations and diversity issues in the workplace (66.1% and 58.7%, respectively). See Table 8.

Table 8. Greater Recognition of Externship Benefits

Externship Benefits	Number	Percent
Workplace comp[illegible]ies and behaviors	104	86.0%
Connecting sch[illegible]to business	101	83.5%
Current information/technological advances	91	75.2%
Importance of networking with business	85	81.2%
Vast array of occupations	80	66.1%
Diversity	71	58.7%

One hundred and three participants agreed that the externships provided ideas for developing workplace skills in students. Ideas for setting goals (short- and long-range goals) were reported by 80.9% of the respondents. Ideas for training materials emphasizing personality traits were reported by 61.2%, while 51.4% gained ideas for recognizing achievements. Responses from classroom teachers (N=70) and support personnel (N=33) varied slightly.

Participants were asked to list the items that they most disliked about their externships. For reporting purposes their responses were grouped into these categories: lack of sufficient work, personal sacrifices, not enough time, lack of preparation, the job itself, and job functions/idiosyncrasies. These categories and their negative responses are found in Appendix B. The most written negative comments were (1) too much observation, (2) not enough hands-on experiences, and (3) the externship was too short.

Participants were asked if they would recommend the externship experience for other educators. Their most popular responses for the "yes" answer were actual job experiences, relating job experiences to classroom instruction, and business/industry communication with schools. Appendix C lists the actual responses.

Participants who answered "no" gave the following responses: "I don't feel like the organizers worked with the employers enough. These people are doing a lot for us"; and "Pay is too low with increased requirements. It was not worth it—too many other ways to earn better money."

CONCLUSIONS

The data in this study support the conclusion that externship experiences are of value to elementary, middle, secondary school and technical college teachers, counselors, specialists, and administrators. Most of the educators reported that their externship either greatly contributed or somewhat contributed to the improvements of their teaching or school responsibilities. Externs reported increased knowledge of workplace skills as a result of their externship experience, which is one of the main goals of externship programs.

Externship Effect

Almost all of the externs indicated that their externship either greatly contributed or somewhat contributed to their teaching or school responsibility regardless of the number of hours worked. However, a higher percentage of externs who worked more than 40 hours indicated that their externship greatly contributed to their school or teaching responsibility.

The type of work responsibility did not seem to be a factor with externs as to the value of their externship experience on the improvement of their teaching/school responsibility. A large percentage of externs perceived that their externship contributed greatly or somewhat to improving their teaching or school responsibility regardless of the type of work performed—observational, hands-on, or both. However, externs who completed hands-on experiences or a combination of observational and hands-on experiences indicated that their externship had a greater effect on their school responsibilities compared to externs who had only observational experiences. This finding leads to the conclusion that externs may receive greater value from externships that require more involvement in the worksite. Some participants responded that greater value could be realized if clearer communication was established between the extern and the employer as to work expectations.

Workplace Knowledge

All participants indicated that the value and merits of their externships were well worth the efforts. The externships did provide valuable experiences and workplace information to help make the externs better teachers. Most externs reported increased knowledge of workplace skills in teamwork, interpersonal skills, problem solving, listening, organizational effectiveness, oral communication, motivation, creative thinking, personal and career development, and goal setting skills. Writing skills and mathematical computation were the least impacted areas that resulted from the externship experience.

Curriculum

All of the instructional elements listed on the questionnaire received some responses, which indicated that the externship experiences did have an impact on curriculum. A majority of externs reported that their curriculum was impacted by their externship in the areas of learning objectives, work-based learning, and hands-on activities. The curriculum element least impacted by the externship experience was study guides. Some participants indicated that a greater impact on curriculum could result if the externship responsibilities were more closely related to the teaching or school responsibility of the extern.

Teaching Methodology

Externs indicated that their teaching methods were impacted by their externship in all the areas listed on the questionnaire. Receiving the highest number of responses were teaching methods involving team or group activities and problem solving activities, followed by small group discussions and projects. Participants indicated that their externship experience had not impacted their teaching methods in the areas of test preparation, educational games, and workbooks and exercises.

Developing Workplace Skills in Students

Externs indicated that they gained ideas for developing workplace skills in students. Essential workplace skills were listed on the questionnaire in six types or subsets of skills: (a) learning to learn; (b) reading, writing, computation; (c) creative thinking/problem solving; (d) communication including listening and speaking; (e) interpersonal/negotiation/teamwork; and (f) self-esteem, motivation/goal setting and employability/career development skills. More than 60% of the respondents indicated that they gained ideas for action/hands-on strategies; following detailed, sequential directions to complete a task; decision making and problem solving; brainstorming; active listening; behaving as members of a functioning unit/sense of loyalty; forming relationships; and ideas for training materials emphasizing personality traits and goal setting. In contrast, approximately 25% of the classroom teachers gained ideas for reading, journal keeping, or speaking to groups.

Externship Benefits

The data in this study strongly support the accomplishment of the objectives as stated in the Wisconsin Educator Externship Model. An overwhelming response was indicated by externs that as a result of their externship they had a greater recognition of workplace competencies and behaviors. Likewise, a large percentage of externs responded with a greater recognition of connecting school to businesses. Many externs reported gaining current information and technological advances and acknowledged the importance of networking with businesses. The vast array of occupations and diversity issues received more than a majority of the responses from the participants in this study.

Most externs indicated that they would recommend the externship experience to other educators for the following reasons: real world job experiences, job experiences relate to classroom instruction, and increased communication with business and industry and schools. Externs indicated areas that they liked least about their externship-too much observation, not enough hands-on experiences, personal sacrifices, not enough time, lack of preparation, and some of the job functions and idiosyncrasies. Participants wanted more involvement in their externships, more hands-on activities.

The lack of communication among the organizers, externs and employers and low pay for the externs were the main reasons for externs not wanting to do another externship. However, most externs responded, "Yes" to doing another externship. The most popular reasons were actual job experiences, connecting job experiences to classroom instruction, and increased business/industry communication with schools. In the open-ended question on the survey, many externs stated that their externships were very valuable experiences.

RECOMMENDATIONS

In this study, the data presented adds to the body of knowledge in describing the teacher externship experience. While this study is a good start toward achieving some of the goals discussed previously, more research needs to be completed using some of the following variables:

1. Use a different geographic region or state to conduct similar research
2. Specifically, research should be conducted
   (a) using different teacher externship models;
   (b) using a different set of externship participants, specifically targeting administrators, guidance counselors, and support personnel; and
   (c) replicating this study but utilizing other covariates not considered here. Some might include socioeconomic status, geographic locations (i.e., urban-suburban-rural), type of teacher training institution (research v. teaching), and grade level (elementary, secondary, postsecondary).

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APPENDIX A: RESPONDENTS' COMMENTS ON EFFECT OF EXTERNSHIP ON TEACHING/SCHOOL RESPONSIBILITIES

Workplace Competencies and Skills

Learned management by consensus
Organizational skills are so important
Found that many high school graduates need more basic math skills
I have a better understanding of what is expected in the workplace
No matter what field one goes into, he/she needs to be able to communicate clearly
Preparation is a key
Stressing problem solving
Setting goals for personal and business purposes
Made me realize the importance of organizational skills
Awareness of lack of communication skills
Lack of basic reading skills
Try harder to impress upon children responsibility
Reinforced importance of homework... work ethic
Stress attendance and punctuality... important for team responsibility

Human Relations Skills

It showed me how important it is to be a good listener
Interpersonal skills are more important or at least equally important as job skills

Employment Contacts, Business Relationships, and Resources

Contacts to be in touch with in order to possibly place future students in shadow/coop program
Provided me with community contacts
Developed a better network of referral resources
Better community networking and experiences for my students
Made me appreciate current community events, politics, business and economic factors and relationship between them
More classroom resources
"Real world experience"
Realized the transferable skills educators possess
Gained a friend and a classroom presenter

Current Information and Actual Workplace Situation Examples

Knowledge of curriculum as it pertains to the job sites
It gave me the opportunity to better understand how technology is influencing the business world
Gave me concrete examples to use in class
Gave me understanding of certain laws

Validating Instruction

The first-hand experience I can relate to students validates my instruction to them
Allowed me to see how necessary conflict resolution is for students to function in society
To succeed in a professional world, students need to learn to conduct themselves in a professional manner
We have even changed our curriculum depending on the needs of the workplace
I was able to see how local businesses use the software we are teaching
I was able to use much of what I witnessed in the International Department to my International Business Course

Career Planning

Appreciation for types of labor
Variety of positions within an organization
Various levels of training and education needed
I was able to ask local employers what they expected from workers right out of high school

Understanding Business Organizations

Stress the importance of teamwork
Stress the importance of individual responsibility
Made me very aware of how schools are so much different than the workplace
Saw the impact of the Internet on a business
Experience the impact of e-mail
I had to be able to float from one area to another
I learned never to second-guess the owner.

APPENDIX B: RESPONDENTS' COMMENTS ON ITEMS DISLIKED ABOUT EXTERNSHIPS

Lack of Sufficient Work

Not enough to do
I wanted to work-not sit and listen
Wish it would have been more hands on, rather than watching and interviewing others who work in the company
Inability to actively participate
I was really only an observer
Sometimes there was downtime with nothing to do and sometimes it was too busy
Spent many hours observing-little hands on action
After shadowing various people, I didn't feel very productive because I couldn't actively get involved
There was a lot of physical work; therefore, I developed a video of the workplace-for the company to use

Personal Sacrifice

Giving up summer vacation time
Getting up early in the summer

Not Enough Time

It was difficult to function as an "aide" after having my own classroom
I was unable to develop a relationship with students because I went to different rooms
It wasn't long enough
Lack of time to talk to employer and workers
That I had to do this within the first three weeks after school was out
It made it difficult for the employers so many wouldn't participate
Meeting with some people within the course deadlines was very difficult
They did not have enough time to show me some of the things I wanted to see

Lack of Preparation

The difficulties of the physical labor (not using intellectual abilities)
Lack of a formal business orientation
I needed a tour of the whole business before beginning work
Difficult to come in and be put to work immediately
Lack of my experiences and opportunities to perform various jobs
That I couldn't participate more
I don't know how to run skill saws, etc.
It was the first time for them, so the organization was lacking slightly
This will be rectified the next extern

The Job Itself

Paperwork-but most was necessary for documentation and record keeping
The chance to see up close the "inner workings" of a business corporation
Sometimes I spent many hours working alone in a cubicle ·

Job Functions/Idiosyncrasies

Wages were low for first internship period
As an educator, you are "on stage" from 7:45 to 3:45-you can't leave your class
At the externship sites, it moved at a more relaxed pace
I struggled to get into that mode
Writing the paper
More useful to spend time on lesson plans or study guides or making "preps" for hands on experience
Paperwork
Keeping the journal
It was a bit of a hassle getting the externship set up
The company was very gracious and spent a lot of time with me and another teacher doing the externship, which made me feel a bit guilty-like I was taking a lot of time from people who were already busy
The worst part was being the lowest on the totem pole and being the oldest on the job
Office atmosphere
I was really tired at the end of each day
Didn't always feel industry recognized "our contributions or partnerships" as educators.

APPENDIX C: RESPONDENTS' COMMENTS ON RECOMMENDING EXTERNSHIP EXPERIENCE

Actual Job Experiences

It is revitalizing, motivating, keeps teachers in touch with the world and it's good for us to work together and get to know each others' concerns
It's always important to see how others make their living on their turf
Very eye opening to see what the "business world" is like
All business people should spend a day teaching too
It gets us to see the real work world
Helps gain knowledge about types of jobs all students can do and what is needed to complete these jobs
Learned a lot about business and the qualities an employee needs to have to succeed
Great perspective of what's available in the work force
Educators need to make realistic goals for the students and see how teamwork and problem solving and oral communication skills need to be stressed in every curriculum
Teachers need to see how the real world functions
Makes people aware of what other professionals need to make it work
Workplace awareness-what's happening and why
After the externship I could speak from first-hand experience about the value of group work and good communication skills
I also saw a large variety of jobs being performed
It helps teachers see how the workplace has changed

Relating Job Experiences to Classroom Instruction

It's important to know what will be expected of our students in the future and any personal growth on the part of a teacher is a benefit to his or her students
A good learning experience
Good knowledge of application of school to work
Shows you what job skills are needed in the workplace
I saw a wide variety of jobs and the job hunt process
It was a valuable experience
Increased awareness of what other adults do to earn a living-opportunity to pass this awareness on to students
There were great hands-on activities
Ability to frame what it is you want to learn
Learned a lot directly applicable to classroom
A continuous process of learning and improvement
Can't train people for work if you don't know what work is

Business/Industry Communication with Schools

Increase partnership between school and community
I think it's important to develop a partnership between business and schools
It is an excellent way to learn about a company in your community and to see what students need to know to make it in the working world. It's vital that education/ business, etc., work together

An Analysis of Factors Associated with Research Productivity of Business Education Faculty

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ABSTRACT

This study sought to determine the factors that explain the research productivity of business education faculty in colleges and universities. For business educators in this study, publication in refereed journals was used as a surrogate for research productivity. The study described the research productivity of business education faculty, their perceptions of the organizational culture that exists to support research productivity, and their self-assessment of their research competency. The population for the study included all professorial rank faculty in the United States employed full-time at National Association of Business Teacher Education (NABTE) institutions.

In general, an organizational culture and support for research exists in the institutions where the business educators work. The faculty reported having confidence in their ability to conduct research and disagreed about the statements that contain concerns about conducting research. The regression analysis revealed that three variables explained 51% of the variance in research productivity. These variables included number of masters' students advised to completion in the last five years, gender, and publishing and researching during the terminal degree program. The variables that did not explain a significant proportion of the variance were percent of the faculty member's time allocated to research, salary, graduate assistant hours assigned, academic rank, university type, age, research confidence, and number of doctoral students advised to completion in the last five years. This research provides support that graduate programs and conducting and publishing research in the terminal degree program can increase research productivity.

INTRODUCTION

The roles of faculty in higher education involve teaching, research, and service. Typically, when evaluation of faculty in local university culture occurs, each of the three roles is weighted equally. However, in many cases "it is not uncommon to find that research is more equal" (McKeachie, 1994, p. 7). Recent studies have shown that research productivity plays a major role in attaining success in academia as it relates to promotion, tenure, salary, and the fringe benefits of the profession. Studies have also shown that research productivity varies widely from institution to institution depending on the emphasis that is placed on three key aspects of higher education, namely, teaching, research, and service.

In higher education, faculty with a successful publishing record and expertise in research are often admired by other faculty and students as being on the cutting edge of their field and regarded as knowledgeable about most issues in their field. McKeachie (1994) stated that research can provide individuals with a better background to be successful teachers. It can be observed that these highly productive faculty members are perceived as more powerful educators and often serve as a frame of reference for junior faculty members or others who are developing their own research agenda (Levine, 1997).

Most faculty members believe in the importance of all three parts of the university mission and that all parts of the mission are equally as important in education (Kelly & Warmbrod, 1986). Even though other research examines research productivity in higher education, there is not a comprehensive representation of the research productivity of business educators. Since much of productivity in academic settings focuses on research productivity, this study focused on the research function of the universities teaching, research, and service mission.

CONCEPTUAL FRAMEWORK

In academia, during the 1990s, there was an increase in published research and research productivity (Sax, Astin, Korn, & Gilmartin, 1996). Researchers in the field of business education have started to explore the profession in regard to published research. Research has been conducted in the areas of business education research methodologies (Stitt-Ghodes, 2000) and research issues and needs of business education (Bartlett & Mansfield, 2001; Bronner, 2000). Research has broadly examined the productivity in terms of ranking of institutions and departments (Schramm & Stanford, 1992). However, a thorough search of the literature reveals that minimal attention has been paid to research productivity of faculty in career and technical education areas and, more specifically, business educators.

Several variables have been reported to relate to research productivity. The key variables in the literature fall into three main larger categories of terminal degree training, organizational culture and social interaction, and personal attribute and attitudinal variables. The pattern of these categories provides a base to present a conceptual framework and create a mental model that academic research productivity is based on previous training, current support, and individual attributes and attitudes.

Research Training Environment

In the area of terminal degree training, one key variable is the involvement of faculty with graduate student research. Kahn (1997) found that individuals in doctoral programs had higher research self-efficacy, and self-efficacy was related to higher research productivity. Daly (1995) also supports this by stating that the practice setting and doctoral education is related to higher research productivity. Furthermore, the concept of terminal degree being a key variable is supported by Dundar and Lewis (1998) when they reported that high ratios of graduate students to faculty also correlate with productivity, and the percentage of graduate students that were hired as research assistants correlated highly with research production.

More directly, Kelly and Warmbrod (1986) found that the number of doctoral committees chaired successfully resulted in higher faculty research productivity. Gorman and Scruggs (1984) also reported that participation in graduate student research was related to faculty research productivity. Kezmarsky (1989) reported that a favorable attitude towards research upon exiting a doctoral program and not research skills is positively related to research productivity. In a more specific study of vocational education faculty, Kelly (1982) found that actively seeking research opportunities during graduate school was identified with high producers of research.

Personal Variables

Many personal variables have been shown to relate to research productivity. The variables of age, years in profession, gender, rank, ethnicity, educational level, personality, and confidence in research ability/research self-efficacy have all been examined in previous studies of research productivity. The following is a summary of those variables.

Age has been included in several studies with conflicting results. Bland and Berquist (1997) observed that the average productivity of faculty seems to drop with age, however, many senior faculty members remain quite active in research activities and their products are comparable to those of younger faculty members. They also reported that there is no significant evidence that age determines a drop in productivity, but increased workloads and shifting emphasis is to blame. Gorman and Scruggs (1984) reported that age was related to research productivity, while Greer (1997) reported that active researchers are younger. In a specific study that primarily examined aging faculty and research productivity, Wade (1993) found no differences. Blackburn Bieber, Lawrence, and Trautvetter (1991) stated that the relationship between age and research productivity had been addressed in many studies and that little if any, and sometimes contradictory, correlations have been found.

Gorman and Scruggs (1984) and Vasil (1992) found the number of years of professional employment was related to faculty productivity. Pfeffer and Langton (1993) reported that total years in the profession had a major impact on total research but an insignificant effect on recent research productivity. In marketing programs it was found that program maturity related to research productivity (Koojaroenprsit, 1996). Again, Blackburn et al. (1991) stated that the relationship between educational experience and research productivity had been addressed in many studies and that little if any, and sometimes contradictory, correlations have been found.

Gender and research productivity have been explored in many studies, and findings report relationships exist. Osadebe (1996) reported that males produced more research, and to further support this, Bailey (1992) reported a higher level of research productivity by male faculty members over female. Other studies (Kahn, 1997; Vasil, 1991) reported that males have higher self-efficacy perceptions towards research. Vasil (1991) also reported that males spend more time performing research tasks than females. Other researchers have noted that female faculty members are lagging behind experienced male faculty members in research productivity (Gmelch, Wilke, & Lovrich, 1986; Smith, Anderson, & Lovrich, 1995; Sax et al., 1996). Kelly (1982) reported that successful female researchers were mentored by male researchers and were married to males who also held doctoral degrees. Blackburn et al. (1991) stated that the relationship between gender and research productivity had been addressed in many studies and that little if any, and sometimes contradictory, correlations have been found.

Several studies reported the relationship between research productivity and salary (Jacobsen, 1992; Pfeffer & Langton, 1993; Rebne, 1989; Tornquist & Kallsen, 1992). Since salary often reflects research productivity levels, the relationship was expected. Paying attractive salaries in return for performance may serve as an incentive for higher productivity from faculty members. Higher salaries may also attract productive faculty while at the same time minimizing the possibility of losing active faculty to other institutions (Pfeffer & Langton, 1993).

Attitude towards research has been shown to relate to research productivity. Faculty members' confidence in their research abilities is related to faculty research productivity. Schaupp (1994) reported that women with higher expectations predicted higher research productivity. Bean's (1982) model of faculty research productivity included the perceived level of legitimacy in one's research as an explanatory factor. Increases in ability and self-efficacy were also related to increased research productivity in studies conducted by Vasil (1992, 1996). Jones (1993) reported that individuals who perceived their research as a value were higher producers of research. Self-efficacy of research has also been shown to be linked to the training environment (Phillips, 1992).

Organizational Culture and Social Interactions

Another factor related to faculty research productivity is the size of the institution in which the faculty member works. Behymer (1974) studied research productivity of faculty in four-year colleges and major research universities and reported that faculty in major research institutions publish more than faculty at four-year colleges. This was similar to the findings by Bailey (1992) that research productivity increased from Liberal Arts II Colleges through Research I Universities. Dundar and Lewis (1998), Gorman and Scruggs (1984), and Vasil (1992) also reported that institutional size was related to research productivity. However, Blackburn et al. (1991) reported that the characteristics of the employing institution were not related to research productivity.

The enhancement of the freedom to collaborate results in increased research productivity (Bland & Berquist, 1997). Landry (1996) found that collaboration of all kinds may increase researchers' productivity. Pfeffer and Langton (1993) found that collaboration was reduced by wage dispersion. However, opportunities to share work or communicate with peers were shown to relate with research productivity (Christensen, 1991; Ito, 1994; Yoakum, 1993). Another method of social interaction, the development of networks of colleagues, is also related to research productivity (Padernal, 1993). Kelly (1982) reported that high producers of research were usually mentored and they collaborated with well-known researchers and had a large network of colleagues. Bailey (1992) found that rank is a significant predictor of research productivity. Dundar and Lewis (1998) found that departments with higher ranked faculty had higher research productivity. Vasil (1992) reported that rank is a significant predictor of research productivity.

Kelly and Warmbrod (1986) stated that "Perceived institutional and departmental support for research are seen as the most important enablers to research productivity" (p. 31). Dundar and Lewis (1998) found that the percentage of graduate students hired as research assistants correlated highly with research production. Only one study could be found (Dundar and Lewis, 1998) that addressed faculty size. The researchers reported that programs with smaller numbers of faculty cannot compete with larger universities in the area of research productivity.

This study uses publication in refereed research journals as a surrogate for research productivity, an approach supported by the literature. Radhakrishna and Jackson (1993) reported that publishing in refereed journals was ranked as the most important factor when agricultural and extension education department heads were asked to rank the importance of 13 factors in the evaluation of faculty. In a related study, Radhakrishna, Yoder, and Scanlon (1994) concluded that "Publications (refereed articles in journals and paper presentations in conferences) are considered to be a very important component of faculty productivity" (p. 17). In Kelly and Warmbrod's study (1986), most of the variance (84.1%) in their research productivity score was explained by publications in refereed journals, with the remaining variance explained by seven other variables. The decision to use refereed journal articles as a surrogate for research productivity was based on the studies cited here.

PURPOSE AND OBJECTIVES

This study sought to establish the factors that explain research productivity of business educators who serve as the faculty in colleges and universities. Specifically, the objectives of this study were to:

1. Describe selected demographic characteristics of the business education faculty in the study.
2. Describe the research productivity of business education faculty members in the study in terms of refereed research publications.
3. Describe business education faculty members' perceptions of the organizational culture that exists in their department to support research productivity.
4. Describe business education faculty members' self-assessment of their research confidence.
5. Determine if selected variables explain a significant proportion of the variance in the research productivity of business education faculty.

RESEARCH METHODS AND PROCEDURES

Population and Sample

The population for this study included all full-time, professorial rank business education faculty employed by colleges and universities in the United States that are National Association of Business Teacher Education (NABTE) institutional members. The frame for the study was drawn from the NABTE membership list and confirmed by telephone calls to member institutions. Using Cochran's (1977) sample size formula and adjusting for a 50% return rate, a random sample of 205 faculty was selected.

Instrumentation

The scales and items used in the instrument were selected after a review of the literature and grounded in the theoretical base of the study. The face and content validity of the instrument was evaluated by an expert panel of university faculty and doctoral level graduate students in business education and in human resource education. The instrument was pilot tested with 20 university career and technical education faculty members. Changes recommended by the validation panel, when appropriate, and those identified as needed during the pilot test were incorporated into the instrument. These changes occurred in the wording of items, the design of scales, and in the instructions for completing the instrument. Internal consistency coefficients for the scales in the instrument were calculated using Cronbach's alpha and were as follows: organizational culture/support for research scale - $\alpha = .88$, and faculty self-assessment of research confidence - $\alpha = .80$.

28

Data Collection

The responses were collected using two mailings and a systematic follow-up of a random sample of non-respondents. Each mailing consisted of a questionnaire, cover letter, and stamped addressed return envelope. A response rate of 36.1% (74 out of 205) was attained after the completion of the two mailings and the telephone follow-up.

Data Analyses

The data were analyzed using descriptive statistics for objectives one to four. Stepwise multiple regression analysis was used for objective five. The alpha level was set á priori at .05. To determine if the sample was representative of the population and to control for non-response error, the scale means for the two primary scales and the primary variable of measure research productivity were compared by response mode (mail versus phone follow up) as recommended by Borg (1987) and Miller and Smith (1983). There were no statistically significant differences between the means by response mode for the two primary scales in the instrument: Organizational Culture/Support for Research Scale - t = .68, p = .49, and Faculty Self-Assessment of Research Confidence Scale - t = .34, p = .74. In addition, there were no statistically significant difference between the means by response mode for the number of single authored manuscript (t=.48, p=.63), coauthored as lead manuscripts (t=.23, p=.84), and coauthored not as lead manuscripts (t=.14, p=.89). It was concluded that no differences existed by response mode, and the data were representative of the population. The mail and phone follow-up responses were combined for further analyses.

FINDINGS

Research Question 1: Demographic Characteristics of Faculty. This research question sought to describe selected demographic characteristics of the faculty in the study. Most of the business education faculty were female (44 or 59.5%), and their mean age was 51.5 years (SD=9.05). The mean salary of those who responded to this question (n = 55), adjusting for nine-month contract, was $53,770 (sd= $17,470), with most holding a nine-month contract (n=50, 68.5%). Of those responding, 47.9% (n=25) were full professors, 19.2% (n=14) were associate professors, 28.8% (n=21) were assistant professors, and 4.1% (n=3) were instructors.

The participants reported that their universities allocated an average of 62.6% of their time for teaching, 18.3% of their time for conducting research, 11.2% of their time for service duties, and 7.5% amount of their time for administrative duties. Many (n=64, 87.7%) had earned the doctorate. The number of doctoral students advised to completion in the past five years ranged from 0 to 2 and the respondents averaged .40 completions (SD=.72), while the number of masters students advised to completion in the last five years ranged from 0 to 55 with an average of 7.8 students advised to completion (SD=13.3).

Research Question 2: Faculty Research Productivity. In this study, articles published in refereed journals in the past five years were used as a surrogate for research productivity. Those surveyed reported that, in the past five years, they had published an average of 2.95 (SD=5.65) refereed journal articles for which they were the sole author, an average of 2.14 (SD=3.35) coauthored refereed journal articles for which they were the lead author, and 1.54 (SD=2.41) co-authored refereed journal articles for which they were not the lead author. The range of publication was from 0 to 30 for single authored publications, 0 to 15 in co-authored publications being the lead author, and 0 to 12 for co-authored publications not being the lead author. Of the respondents in the last five years, 47.3% (n=35) did not publish a single authored article, 45.9% (n=34) did not publish a co-authored article being lead, and 47.3% (n=35) did not publish a co-authored article not in the lead. Overall 25.7% (n=19) of the respondents did not publish in any category over the last five years.

For the purposes of this study, total research productivity was calculated as follows: the respondent was given a credit of 1.0 for each article published for which they were the sole author, a credit of .50 for each co-authored article published for which they were the lead author, and a credit of .33 for each co-authored article published for which they were not the lead author. The mean faculty research productivity score was 4.53 (SD=7.25).

Research Question 3: Organizational Culture. The Organizational Culture/Support for Research (OCSR) Scale contained 20 items that assessed the faculty members' perceptions of the organizational culture and support for research that existed in their departments. Responses were recorded on a five point Likert scale that ranged from 1=Strongly Disagree to 5=Strongly Agree. The responses are presented in Table 1. The respondents agreed with three highest rated statements, "My department recognizes my efforts to publish in refereed research journals" (M=3.70, SD=1.14), "My department supports my efforts to publish in refereed research journals" (M=3.66, SD=1.20, and "Collaborative publishing of refereed journal manuscripts with other faculty in my department is encouraged" (M=3.57, SD=1.14). The respondents strongly disagreed with the lowest rated (M=1.26, SD=.53) statement, "My department offers more or improved office space or facilities for those who publish in refereed research journals." The scale grand mean was 2.75 (SD=.66), which indicates that the respondents were undecided about most of the items in the scale. The Cronbach's alpha for this scale was =.86.

Research Question 4: Self-Assessment of Research Confidence. The fourth research question sought to describe the faculty members' self-assessment of their research confidence as measured by the Faculty Self-Assessment of Research Confidence. Table 2 shows that the respondents agreed with all but one item in the scale being, "I am confident when conducting the data analysis of a study to be published in a refereed research journal" (M=3.42, SD=.81). The respondents agree with the statements and the overall mean for the scale was 3.76 (SD=.81).

Table 1. Organization Culture/Support for Research

Item	M	SD
My department recognizes my efforts to publish in refereed research journals.	3.70	1.14
My department supports my efforts to publish in refereed research journals.	3.66	1.20
Collaborative publishing of refereed journal manuscripts with other faculty in my department is encouraged.	3.57	1.14
My family supports my efforts to publish in refereed research journals.	3.49	1.22
My department values collaboration in publishing refereed research articles.	3.47	1.14
My university administration recognizes my efforts to publish in refereed research journals.	3.43	1.21
My peers recognize my efforts to publish in refereed research journals.	3.32	1.23
My university administration supports my efforts to publish in refereed research journals.	3.31	1.24
Collaborative publishing of refereed journal manuscripts with individuals from other institutions is encouraged.	3.19	1.20
Faculty in my university view teaching as an impediment to publishing in refereed research journals.	3.18	1.35
My peers support my efforts to publish in refereed research journals.	3.14	1.31
Collaborative publishing of refereed journal manuscripts within my institution, but outside my department, is encouraged.	3.05	1.18
My department offers merit pay for publishing in refereed research journals.	2.66	1.71
My department offers travel money as an incentive for publishing in refereed research journals.	2.51	1.55
I am encouraged by my department to involve students as co-researchers in my efforts to publish in refereed research journals.	2.51	1.25
My parenting responsibilities inhibit my efforts to publish in refereed research journals.	2.11	1.26
My department offers a reduction in teaching load for publishing in refereed research journals.	2.08	1.51
My department offers increased student support for individuals who publish in refereed research journals.	1.84	1.19
My department offers desirable teaching assignments as a reward for publishing in refereed research journals.	1.69	1.19
My department offers more or improved office space or facilities for those who publish in refereed research journals.	1.26	.53
Scale Grand Mean/Standard Deviation	2.75	.66

Note. 5=Strongly Agree, 4=Agree, 3=Undecided, 2=Disagree, 1=Strongly Disagree. N=74. Cronbach's Alpha = .86

Table 2. Faculty Self-Assessment of Research Competency

Item	M	SD
I am confident when writing the findings of a research study to be published in a refereed research journal.	3.89	.89
I am confident when determining the purpose and objectives of a study to be published in a refereed research journal.	3.88	.91
I am confident when writing the conclusions and recommendations of a study to be published in a refereed research journal.	3.85	.86
I am confident when determining a research methodology of a study to be published in a refereed research journal.	3.81	.88
The research I produce is respected by my peers.	3.78	.85
I am confident when determining a research/theoretical base of a study to be published in a refereed research journal.	3.71	.98
I am confident when conducting the data analysis of a study to be published in a refereed research journal.	3.42	1.07
Scale Grand Mean/Standard Deviation	3.76	.81

Note. 5=Strongly Agree, 4=Agree, 3=Undecided, 2=Disagree, 1=Strongly Disagree. N=74.

Research Question 5: Explanation of Variance in Research Productivity by Selected Variables. The last research question sought to determine if selected variables explain a significant proportion of the variance in research productivity. A stepwise multiple regression procedure was used to examine the amount of variance in research productivity explained by selected variables. Table 3 shows that the procedure revealed that three variables entered the model to explain 51% of the variance found in research productivity (R^2=.51). These variables included number of masters students advised to completion in the last five years (R^2=.444), gender (R^2=.046), and publishing and researching during the terminal degree (R^2=.020). The variables that did not explain a significant proportion of the variance were faculty members time allocated to research, whether they were employed in a land grant university, age, gender, rank, number of doctoral students advised to completion in the last five years, and number of years they had held a tenure track position. It should be noted that, even though salary has been shown to relate to research productivity, faculty salary was not included in the regression analysis because of the high non-response rate on this variable.

Table 3. Stepwise Multiple Regression Analysis of the Extent to Which Variance in Research Productivity is Explained by Selected Variables

Source of variation	SS	df	MS	F	p
Regression	1957.65	3	652.55	24.29	<.001
Residual	1880.46	70	26.86		
Total	3838.11	73			
Variables in the equation	R^2	Beta	Cum R^2		
Number of Masters Students Advised to Completion in Last Five Years	.444	.619	.444		
Gender	.046	-.204	.490		
Publication and Research in Terminal Degree	.020	.142	.510		
Variables not in the equation	t	p			
Time Spent on Research	1.09	.90			
Graduate Assistant Hours	-.15	.88			
Academic Rank	.38	.70			
Land Grant University	.68	.50			
Age	-.82	.42			
Mean of Research Confidence Scale	1.01	.32			
Doctoral Students Advised to Completion in Last Five Years	1.09	.28			

CONCLUSIONS

Research productivity of business education faculty is quite varied. Over a quarter of the business educators have not published in refereed journals in the last five years. In general, an organizational culture and support for research exists in departments where business education faculty work. The business education faculty are confident in their ability to conduct research but not as confident about conducting the data analysis. Three variables explain 51% of the variance in research productivity of business education faculty members.

The number of masters students advised is the most powerful explanatory variable. This conclusion supports other research that found advising graduate students related to higher research productivity and specifically, the finding of Kelly and Warmbrod (1986) that the number of doctoral committees chaired successfully results in higher research.

The second explanatory variable was gender. Females were not as productive in the publication of refereed journal articles as males. This is consistent with Osadebe (1996) and Bailey (1992) who found that males reported a higher level of research productivity. This variable needs further exploration since there is inconsistency in previous research.

The third explanatory variable was the mean score of the publications and research conducted during the terminal degree. This variable supports the findings of Kahan (1997) that the terminal degree is related to publication productivity and also aligns with Daley's (1995) finding that publishing and self-efficacy to publish relate to research publication productivity.

Although all variables included in this study were selected based on the theoretical and research foundation for the study, several variables do not explain faculty research productivity levels, namely, percent of the faculty member's time allocated to research, number of masters students advised to completion, age, gender, rank, size of the institution, and number of years in a tenure track position.

IMPLICATIONS

Research productivity has been and continues to be one of the most highly valued aspects of a faculty member's career, especially when university promotion, tenure, faculty evaluation, and university goals are considered. There are some in our profession who want university administrators to place a higher value on other forms of scholarly productivity. However, until that occurs, business education faculty and administrators would do well to heed the results of this and similar studies.

For the immediate future, research productivity in the form of publication in refereed research journals will continue to be strongly encouraged. Faculty should attempt to find ways to advise students enrolled in graduate programs. The findings provide evidence to support policy to require doctoral students to conduct research and publish during the completion of the terminal degree. More research is needed to examine the gender difference in research productivity. Faculty may want to pay some attention to the other variables addressed in this study since they were related to faculty productivity in other studies.

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Business Educators' Knowledge of Web Pages: An Investigation of Professional and Classroom Use

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ABSTRACT

The focus of this research was to document business educators' knowledge and use of Web page technologies in the classroom. A total of 476 business educators responded to a questionnaire that included three sections: (1) demographic information, (2) knowledge of Web pages, and (3) use of Web pages. The findings reveal that less than half of the respondents have had training to design Web pages and have a course or professional Web page. In addition, there were several areas of significant differences between Web page knowledge and use in relation to the demographic variables studied.

The Internet is quickly becoming one of the most commonly used technologies all over the world. As indicated by Lake (2000), the Web is growing by two million pages a day. This surge has created a demand for people with a high degree of knowledge in Web page design. The shortage of individuals qualified to create, maintain, and use Web sites, however, is far from being met by colleges and universities (Kunde, 1998).

Most teacher education programs are offering courses to educate future teachers in the use of new technologies (Stoloff & Mach, 1999; Letscher, Culik, Phillips, Young, & Tibbs, 1998). It is also vital that current teachers keep their technology skills up to date. Toward this endeavor, many educational organizations are beginning to offer training for in-service teachers to incorporate the use of Web pages into existing curriculum (Adamyk & Dach, 1999; Chen, 2000; Rups, 1999; Scarcella and Lane, 2000).

While many faculty are still learning how to integrate Web-based technologies into existing curriculum, a large number of students enter college with quite a bit of Internet or Web-based knowledge (Thomson & Stringer, 1998). Although some faculty are struggling to learn how to mix new Web technologies into existing curriculum, as Chandler and Maddux (1998) report, students feel that using Web pages is beneficial to them and are using them when they are available.

Business educators need to be prepared to educate their students to compete in fast paced, quick changing information technologies. In order to do this, they need to use the new Web technologies themselves. This study, therefore, will identify business educators' knowledge of Web pages and investigate their professional and classroom use.

NEED FOR THE STUDY

Businesses need technologically proficient employees in today's workforce. This need can be addressed by integrating such technologies as the Internet and Web pages into the classroom process (Cho, 2001; Zirkle and Ourand, 1999). Toward this end, business educators' knowledge and use of Web pages should be studied.

STATEMENT OF THE PROBLEM

The demand in business for individuals with training in how to design and maintain Web pages is great; yet as reported by Kunde (1998), educational institutions are not meeting this demand. Therefore, the problem identified in the present study was *What is the influence between business educators' demographic variables and their knowledge and classroom use of Web pages?*

The demographic variables studied included gender, age, education, years of teaching experience, and institutional affiliation.

To investigate this problem, a group of secondary and postsecondary educators who were members of the National Business Education Association (NBEA) was surveyed. The following research questions were addressed:

1. What is the knowledge and classroom use of Web pages by business educators?
2. Are there any differences between business educators' knowledge and classroom use of Web pages in relation to gender?
3. Are there any differences between business educators' knowledge and classroom use of Web pages in relation to age?
4. Are there any differences between business educators' knowledge and classroom use of Web pages in relation to education?
5. Are there any differences between business educators' knowledge and classroom use of Web pages in relation to years of teaching experience?
6. Are there any differences between business educators' knowledge and classroom use of Web pages in relation to institutional affiliation?

PURPOSE OF THE STUDY

The ability to transfer course material to the Internet is essential, and the ability to create course Web pages is a necessity (Zirkle & Ourand, 1999). Therefore, the purpose of this study was to provide information for administrators and educators to assist them when incorporating Web page technologies into existing courses. Identifying the knowledge and classroom use of Web pages by business educators will provide a basis for curriculum development.

DELIMITATIONS AND LIMITATIONS

Since certain elements of the topic were eliminated from consideration and other factors inherent in the study should be recognized, delimitations and limitations were as follows:

Delimitations

This study did not attempt to identify how business educators' create Web pages, provide guidelines for Web page design or development, or identify appropriate Web page content. This study attempted only to identify business educators' knowledge and use of Web pages in the classroom.

Limitations

This study is limited to a random sample of secondary and postsecondary National Business Education Association (NBEA) members. It may not be representative of all business educators.

METHODOLOGY

A questionnaire based on the literature was designed by the researcher to identify the knowledge and classroom use of Web pages by business educators. The questionnaire contained three parts: (1) participants' demographic information, (2) knowledge of Web pages, and (3) use of Web pages in the classroom.

Validity

A panel of 15 members including business educators and administrators reviewed the questionnaire's content. The panel members were published authors and educators of technologies. The evaluation of the panels' review indicated that the questionnaire covered the stated objectives.

Reliability

The test-retest method was used to verify the reliability of the questionnaire. Twenty business educators (10 business educators at the secondary level and 10 business educators at the postsecondary level) agreed to fill out the survey for testing and retesting purposes. Comparisons of the test and retest indicated the questionnaire was reliable.

Questionnaire Administration

The questionnaire was mailed to a listing of 1,000 business educators randomly selected from a national database of NBEA (National Business Education Association) members. The first mailing was sent to 500 secondary and 500 postsecondary business educators and was followed by a second mailing, approximately five weeks later, to all nonrespondents. The total response included 225 secondary and 251 postsecondary business educators, resulting in a response rate of 47.6% (N=476).

Data Analysis

The data were analyzed using descriptive statistics and included percentages and frequencies as appropriate. Pearson's chi-square was used to test significant differences and was determined using the .05 level.

FINDINGS

Following a demographic profile of the NBEA member respondents, an analysis of business educator's knowledge and classroom use of Web pages in relation to the demographic variables of gender, age, education, years of teaching experience, and institutional affiliation are presented.

Demographic Profile of Business Education Respondents

Respondents were asked to provide their gender, age, education level, years of teaching experience, and institutional affiliation. The typical respondent was female, over 40 years of age, had a master's degree, and had 15 or more years of teaching experience. There was representation from educators from both secondary and postsecondary institutions (47% and 53 % respectively). (See Table 1.)

Table 1. Demographic Profile of Business Education Respondents

Variable	Frequency (N=476)[a]	Percent
Gender		
Male	69	14.5
Female	406	85.5
Age		
21-40	80	16.9
41-50	183	38.6
51+	211	44.5
Education level		
Bachelor's	87	18.3
Master's	333	70.1
Doctorate's	53	11.6
Years of teaching experience		
<15	147	31.0
15-25	154	32.5
>25	173	36.5
Institution affiliation		
Secondary	225	47.3
Postsecondary	251	52.7

Note: [a] Some respondents elected not to fill out the demographic section.

Business Educators' Knowledge and Classroom Use of Web Pages

Research question 1 was designed to identify business educators' knowledge and use of Web pages. Almost 89% of the respondents reported that their educational institution had its own Web page. Approximately 47% know how to make Web pages, 21% had a course Web page, and 19% had a professional Web page. Forty-three percent had training to make Web pages, with the most common methods as in-house training (50%) and off-site training (45%). About 20% teach their students how to make Web pages, and 18% assign student's Web page development projects, as shown in Table 2.

Table 2. Business Educators' Knowledge and Classroom Use of Web Pages

Question	Frequency (N=442)[a]	Percent
Does your institution have its own Web page?	393	88.9
Do you have a course Web page?	94	21.3
If yes, what does it contain? (N=94)		
Syllabus	62	66.0
Links to other sites	51	54.3
Resource notes	38	40.4
Lecture notes	27	28.7
Other[b]	16	17.0
Do you know how to make a Web page?	208	47.1
Do you have a professional Web page?	83	18.8
If yes, did you make it yourself? (N=83)	59	71.1
Have you had any training on how to make a Web page?	189	42.8
If yes, how were you trained? (N=189)		
In-house training/instruction	94	49.7
Off-site training/instruction	85	45.0
Co-worker/friend	16	8.5
Trainer (one on one)	10	5.3
Do you teach your students how to make a Web page?	89	20.1
Do you assign your students Web page development projects?	80	18.1

Note: [a] Out of 476 respondents, 34 did not have Internet access.
Note: [b] The "Other" category included personal information, chat lines, newsgroups, and other course information.

The Influence of Gender on Business Educators' Knowledge and Classroom Use of Web Pages

Responses to research question 2 identified any differences between male and female business educators' knowledge and classroom use of Web pages. There were no statistically significant differences as a result of this analysis, as shown in Table 3.

Table 3. Business Educators' Knowledge and Classroom Use of Web Pages and the Influence of Gender

Question	Male (N=69) #	Male (N=69) %	Female (N=406) #	Female (N=406) %	Chi-Square	df	p
Does your institution have its own Web page?	59	89.4	333	88.8	0.806	2	.668
Do you have a course Web page?	12	18.2	82	21.9	0.454	1	.500
Do you know how to make a Web page?	27	40.9	181	48.3	1.219	1	.270
Do you have a professional Web page?	14	21.2	69	18.4	0.290	1	.590
If yes, did you make it yourself?	11	78.6	48	69.6	0.459	1	.498
Have you ever had any training on how to make a Web page?	22	33.3	167	44.5	2.875	1	.090
Do you teach your students how to make a Web page?	11	16.7	78	20.8	0.595	1	.440
Do you assign your students Web page development projects?	12	18.2	68	18.1	0.000	1	.992

*Significant at the .05 level.

The Influence of Age on Business Educators' Knowledge and Classroom Use of Web Pages

Research question 3 documented any differences between business educators' knowledge and classroom use of Web pages based on age. This analysis resulted in five areas of statistically significant differences. Business educators in the under-40 age range were significantly less likely to indicate that their institution had a Web page when compared with those aged 40 and above: $\chi^2(4, N = 440) = 9.863$, p = .043. Of the respondents who had his or her own professional Web page, those aged under 40 were significantly more likely to have made it themselves when compared with those aged 40 and above: $\chi^2(2, N = 440) = 15.254$, p = .000. Those above the age of 50 were significantly less likely to have had training for making Web pages than those aged 50 and under: $\chi^2(2, N = 440) = 7.305$, p = .026. Those under the age of 40 were significantly more likely to teach their students how to make a Web page: $\chi^2(2, N = 440) = 7.693$, p = .021); and to assign their students Web page development projects than those aged 40 and over: $\chi^2(2, N = 440) = 10.753$, p = .005. (See Table 4.)

Table 4. Business Educators' Knowledge and Classroom Use of Web Pages and the Influence of Age

	Age								
Question	<40 (N=78) #	<40 (N=78) %	40-50 (N=172) #	40-50 (N=172) %	>50 (N=190) #	>50 (N=190) %	Chi-Square	df	p
Does your institution have its own Web page?	64	82.1	151	87.8	176	92.6	9.863	4	.043*
Do you have a course Web page?	17	21.8	38	22.1	39	20.5	0.142	2	.931
Do you know how to make a Web page?	44	56.4	83	48.3	79	41.6	5.120	2	.077
Do you have a professional Web page?	22	28.2	29	16.9	32	16.8	5.405	2	.067
If yes, did you make it yourself?	20	90.9	24	82.8	15	46.9	15.254	2	.000*
Have you ever had any training on how to make a Web page?	41	52.6	78	45.3	68	35.8	7.305	2	.026*
Do you teach your students how to make a Web page?	24	30.8	35	20.3	30	15.8	7.693	2	.021*
Do you assign your students Web page development projects?	23	29.5	33	19.2	24	12.6	10.753	2	.005*

*Significant at the .05 level.

Table 5. Business Educators' Knowledge and Classroom Use of Web Pages and the Influence of Education

Question	Bachelor (N=79)		Master (N=312)		Doctorate (N=49)		Chi-Square	df	p
	#	%	#	%	#	%			
Does your institution have its own Web page?	69	87.3	280	89.7	43	88	3.971	4	.410
Do you have a course Web page?	10	12.7	69	22.1	15	30.6	6.164	2	.046*
Do you know how to make a Web page?	36	45.6	152	48.7	18	36.7	2.503	2	.286
Do you have a professional Web page?	9	11.4	64	20.5	10	20.4	3.512	2	.173
If yes, did you make it yourself?	9	100.0	44	68.8	6	60.0	4.428	2	.109
Have you ever had any training on how to make a Web page?	31	39.2	138	44.2	18	36.7	1.392	2	.498
Do you teach your students how to make a Web page?	16	20.3	69	22.1	4	8.2	5.109	2	.078
Do you assign your students Web page development projects?	15	19.0	61	19.6	4	8.2	3.734	2	.155

*Significant at the .05 level.

The Influence of Education on Business Educators' Knowledge and Classroom Use of Web Pages

Research question 4 compared business educators' knowledge and classroom use of Web pages with their educational level. There was one area of statistically significant difference. Business educators with a doctorate degree were significantly more likely to have a course Web page than those who held other types of degrees: $\chi^2(2, N = 440) = 6.164$, p = .046. (See Table 5.)

The Influence of Teaching Experience on Business Educators' Knowledge and Classroom Use of Web Pages

Research question 5 identified the differences between business educators' knowledge and classroom use of Web pages as compared with their years of teaching experience. There were two areas of statistically significant differences. Business educator respondents with over 25 years of teaching experience were significantly less likely to know how to make a Web page than those with fewer years of teaching experience: $\chi^2(2, N = 440) = 7.206$, p = .027. Respondents with over 25 years of experience were significantly less likely to have designed their own Web page when compared with those with fewer years of teaching experience: $\chi^2(2, N = 440) = 6.249$, p = .044. (See Table 6.)

Table 6. Business Educators' Knowledge and Classroom Use of Web Pages and the Influence of Years of Teaching Experience

Question	Years of Teaching Experience						Chi-Square	df	p
	0-15 yrs. (N=142)		16-25 yrs. (N=145)		25+ yrs. (N=153)				
	#	%	#	%	#	%			
Does your institution have its own Web page?	123	86.6	129	89.0	139	90.8	2.298	4	.681
Do you have a course Web page?	26	18.3	37	25.5	30	19.6	2.565	2	.277
Do you know how to make a Web page?	76	53.5	72	49.7	59	38.6	7.206	2	.027*
Do you have a professional Web page?	33	23.2	30	20.7	20	13.1	5.446	2	.066
If yes, did you make it yourself?	27	81.8	22	73.3	10	50.0	6.249	2	.044*
Have you ever had any training on how to make a Web page?	61	43.0	68	46.9	59	38.6	2.118	2	.347
Do you teach your students how to make a Web page?	29	20.4	34	23.4	26	17.0	1.927	2	.382
Do you assign your students Web page development projects?	28	19.7	33	22.8	19	12.4	5.684	2	.058

The Influence of Institutional Affiliation on Business Educators' Knowledge and Classroom Use of Web Pages

Responses to research question 6 compared differences between business educators' knowledge and classroom use of Web pages with institutional affiliation. This analysis revealed three areas of statistically significant differences. Postsecondary education institutions were significantly more likely to have an institutional Web page than secondary institutions: $\chi^2(2, N = 442) = 33.861$, p = .000. Postsecondary business educators were significantly more likely to have a course Web page than secondary business educators: $\chi^2(1, N = 442) = 10.670$, p = .001. In addition, postsecondary business educators were significantly more likely to have a professional Web page than secondary educators: $\chi^2(1, N = 442) = 9.869$, p = .002. (See Table 7.)

CONCLUSIONS

Research question 1 asked business educators to indicate their knowledge and use of Web pages. Although the majority of their institutions have a Web page, the majority of business educators do not have a course or professional Web page and have not had training to make Web pages.

Research questions 2 and 3 compared business educators' knowledge and classroom use of Web pages with the demographic variables of gender and age. In relation to the questions asked, gender does not make a difference in Web page use. Based on the comparison from research question 3, there are many differences between age and Web page knowledge and classroom use. Specifically, younger teachers are more likely to be involved in designing their own professional Web pages and have participated in Web page training. In addition younger teachers are teaching their students how to make Web pages and are assigning Web page development projects.

Research questions 4 and 5 compared business educators' Web page knowledge and classroom use with the demographic variables of education and teaching experience. In

Table 7. Business Educators' Knowledge and Classroom Use of Web Pages and the Influence of Institutional Affiliation

Question	Secondary Educators (N=207) #	%	Post-secondary Educators (N=235) #	%	Chi-Square	df	p
Does your institution have its own Web page?	165	79.7	228	97.0	33.861	2	.000*
Do you have a course Web page?	30	14.5	64	27.2	10.670	1	.001*
Do you know how to make a Web page?	88	42.5	120	51.1	3.231	1	.072
Do you have a professional Web page?	26	12.6	57	24.3	9.869	1	.002*
If yes, did you make it yourself?	22	84.6	37	64.9	3.372	1	.066
Have you ever had any training/instruction on how to make a Web page?	90	43.5	99	42.1	0.082	1	.775
Do you teach your students how to make a Web page?	44	21.3	45	19.1	0.304	1	.581
Do you assign your students Web page development projects?	43	20.8	37	15.7	1.877	1	.171

*Significant at the .05 level.

relation to education, business educators with master's and doctoral degrees are more likely to have course Web pages than educators with bachelor's degrees. In relation to experience, business educators with 26 or more years of teaching experience were less likely to know how to make a Web page or make professional Web pages themselves.

Research question 6 compared secondary with postsecondary business educators' use of Web pages and revealed several areas of differences. Postsecondary business educators are more likely than secondary educators to have an institution Web page, a course Web page, and a professional Web page.

IMPLICATIONS

Based on the findings from this study, the following implications can be made.

1. Research question 1 examined business educators' knowledge and use of Web pages. Although not all business educators need to assign Web page projects to their students, they should use Web pages for their courses so that students can have access to course contents outside of class times. Administrators should provide the necessary training to ensure all business educators have this Web skill.
2. Research questions 2 through 5 looked at the influence of demographic variables on Web page use. Although gender and educational level do not have much of an influence on business educators' Web page use, age, years of teaching experience, and educational affiliation do have an effect. Administrators should be aware of the needs of older faculty and make sure they are comfortable with this use of Web technology.
3. Research question 6 compared secondary and postsecondary business educators' use of Web pages. Although it appears that postsecondary business educators use course and professional Web pages more than secondary business educators do, in both instances, this use should be increased. Administrators at both levels need to provide opportunities for their faculty to get needed Web training.

RECOMMENDATIONS FOR FUTURE RESEARCH

1. As this study found that uses of Web pages by business educators for classroom and professional use are low, it should be replicated in five years to determine if this use has changed.
2. This study focused on business educators' knowledge and classroom use of Web pages. Further research should be conducted in the business workplace to ensure that business educators are teaching the Web page skills businesses need.

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Business Education in South Carolina: Implications for All Business Education Programs

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ABSTRACT

Research suggests that there is a national shortage of teachers in the United States and the shortage is expected to grow. Compounding this problem is the reduction in the number of traditional teacher education programs at colleges and universities. The State of South Carolina is no different. A survey was conducted to determine the status of Business Education in the State of South Carolina. Results from the survey suggest that a shortage currently exists and is expected to increase over the next five years. To address the shortage, South Carolina has declared Business Education a *critical needs* area. The critical needs certification allows school districts to hire individuals without traditional teacher certification. This procedure has placed a number of teachers in the classroom with minimal training making it difficult for them to succeed. The overall survey results suggested that hiring personnel in the school districts would consider employing traditionally certified teachers over alternatively certified teachers. If school district hiring personnel see traditional training methods as ideal, the remaining college and university programs need to determine how to reach prospective teachers and how to deliver traditional teacher education programs in a manner that meets the needs of the student, thereby producing more teachers to address the shortage of business educators today and in the future.

INTRODUCTION

Nationally the need for public education teachers is becoming critical. By the year 2006 (Imig, 1997), the student population is expected to reach an all-time high of approximately 54.6 million. Approximately 500,000 additional teachers will be needed between 1996 and 2006 (Imig, 1997). These are new teachers and are in addition to the replacement of large numbers of those retiring. Although these numbers represent teachers and students in all disciplines, business education is also directly experiencing similar increases in student populations and decreases in teacher candidates. In fact, Okula (1999) reported that the shortage of business teachers in the United States is reaching a critical state. Approximately 50% of current business education teachers are either eligible to or close to retirement (Okula, 1999).

NEED FOR THE STUDY

Based on a survey of business education professionals in 1996, Okula (1999) reported that about half of the respondents were currently experiencing a shortage of teachers, and over three-fourths of the respondents expected a shortage by 2001. This need is compounded when the existing traditional, college-based, teacher preparation programs are rapidly disappearing, leaving only a few small programs to fill a greatly increasing need.

In an effort to meet overall teacher shortages, many states are allowing special alternative certification procedures that allow individuals from industry to teach with minimal teacher training. Some schools may even be allowed to waive requirements in order to hire unqualified teachers to fill vacancies (Imig, 1997). Business Education is also moving to alternative certification options. According to Okula (1999), Virginia and South Carolina are offering provisional or emergency certifications that place business professionals with little pedagogical training in the classroom. South Carolina's traditional teacher education programs are now suffering low enrollments. Alternative certification is chosen by some because an individual pursuing a traditional certification program would typically be required to enroll at a university, pay tuition, and likely leave their existing job to complete the teacher preparation program. Wiechel (1999) confirms that traveling distance, finances, and time constraints are often barriers to enrolling in traditional programs. Dill, Haynes, and Johnson (1999) also suggest that required, extended student teaching experiences are not possible for the working professional and may require individuals to relocate, pay costly tuition, and possibly purchase a new wardrobe, all of which are almost impossible to do while working full-time.

Many of the new business teacher candidates are nontraditional students. Typically these might be business professionals between the ages of 30 and 40 with a business-related degree looking for a career change. Some teacher preparation institutions even report these nontraditional student enrollments in their programs to be upwards of 80% (Okula, 1999).

Currently there is a severe shortage of business education teachers. There was an influx of thousands of individuals who began their teaching careers in the 1960s. Most retirement programs allow individuals to retire after 30 years or less of employment. The 1990s, therefore, witnessed a steady exodus of teachers from the profession. This has been the case in many areas around the nation. Teachers are retiring in large numbers. While retirements are high, the number of teacher preparation programs is decreasing (Perreault, 2001). Even programs that were once considered premier vocational teacher preparation programs are experiencing difficulty in attracting students. The decline in student enrollment in the 1990's was so drastic that many premiere programs have closed (Lynch, 1996). This scenario is presenting a critical teacher shortage in many states. South Carolina is one of those states. Several years ago the shortage of business educators was brought to the attention of the legislature and the area of business education was authorized as a "critical needs" teaching area as part of the 1984 Educational Improvement Act (South Carolina Department of Education Division of Teacher Quality).

Critical needs declared teaching areas allowed the state to authorize special reduced teacher licensure requirements through an alternative licensure procedure. This procedure allowed individuals with bachelor or higher degrees in the related content field to immediately enter the classroom while receiving limited classroom management and other teacher training through workshops offered during the school year and over the summer (South Carolina Department of Education Division of Teacher Quality). The declaration of business education as a critical needs area was seen as a saving move for business education, but was it?

Since the authorization of business education in South Carolina as a critical needs area, several state business education programs have closed leaving three programs for the entire state of South Carolina. The three remaining programs have small enrollments, statewide averaging 18, which may jeopardize the future of these programs. One of the remaining programs is a bachelor's degree program; the two others are master's degree programs. Students are reluctant to commit full-time to an educational experience that will cost them time and money when the critical needs approach is quick and direct into the teaching profession.

PURPOSE OF THE STUDY

But how do school district personnel in the state view critical needs certification relative to a traditional degree-granting certification route? Is there really a need for more business educators in South Carolina? What are the implications for all business education programs nationally? These are the questions this project attempted to answer. The purpose of this study was to identify how vocational administrators view alternative certified teachers relative to traditionally certified teachers, business teacher shortages, and if there is a shortage what resources schools are using to recruit new teachers.

METHODS AND PROCEDURES

To examine these questions a survey was developed and reviewed by vocational education researchers to determine the existence and extent of the business education teacher shortage in South Carolina. The survey further recorded the hiring preferences of school district personnel and the types of training school districts consider acceptable. The survey was mailed statewide to all school district vocational education supervisory personnel. This group was selected because of the likelihood that they would have the needed data to accurately complete the survey and in many cases are involved in the hiring of vocational personnel in their respective district. The respondents were asked to complete the paper survey form and return it in the postage paid envelope or to complete the online (web-based) version of the survey. Respondents, regardless of method, were identified by a control code that was already recorded on the paper surveys and was a required entry field for completion of the web-based survey. Open-ended comments were also allowed in the final question of the survey to provide the respondents the opportunity to voice concerns other than those represented in the survey questions. The web-based and paper copy surveys were identical.

FINDINGS

Of the approximately 86 school districts surveyed (representing all levels), 39 surveys, both paper and web-based, were completed. The respondents recorded that on average, based on the four categories on the survey ranging from less than 4 to greater than 18, they anticipated between 4-8 business education position openings over the next five years. Several districts reported an expectation of 9-18 position openings in the next five years as the data in Table 1 illustrates.

Table 1. Business Education Openings: Five-Year Projections

Number of Openings	Percentage	N
Less than 4	58.3%	21
4-8	27.8%	10
9-18	13.9%	5

3 non-respondents

Approximately half of the respondents felt that a shortage of South Carolina business educators currently existed; however, a larger percentage anticipated a shortage within the next five years. Table 2 data shows a summary of the survey results regarding business education teacher shortages. Fifty percent of the respondents felt they were currently experiencing a shortage, while 66.7% felt they would see a shortage within five years.

When asked to rank their hiring preference between four levels of education/training (on average), the respondents said they would (1) hire an individual with a master's degree in the specific teaching field, (2) hire an individual with a bachelor's degree in the specific teaching field, (3) hire an individual with a generic master's degree (any field) and critical needs certification, and (4) hire an individual without a master's degree and critical needs certification.

Table 2. Anticipation of Shortage

Shortage	Percentage	N
Currently experiencing a teacher shortage		
Yes	48.7%	19
No	48.7%	19
Don't Know	2.6%	1
Anticipate a shortage within five years		
Yes	64.1%	25
No	23.1%	9
Don't know	12.8%	5

To further investigate the hiring preferences, the respondents were asked to record how likely they would be to hire one category over another. The survey respondents indicated their preference from those they would be most likely to hire to those they would be least likely to hire as follows: (1) master's degreed individual over a critical needs, (2) master's degreed individual over a bachelor's degree, (3) bachelor's degreed individual over a critical needs trained, (4) bachelor's degreed individual over a master's degreed, (5) critical needs over a bachelor's degree, and least likely (6) critical needs over a master's degree. Table 3 displays the means for the likelihood to hire survey results.

Table 3. Likeliness to Hire by Category (range 4-1)

Question	Mean
Hire a master's degreed individual over a critical needs trained individual	3.49
Hire a master's degreed individual over a bachelor's degreed individual	3.37
Hire a bachelor's degreed individual over a critical needs trained individual	3.32
Hire a bachelor's degreed individual over a master's degreed individual	2.66
Hire a critical needs trained individual over a bachelor's degreed individual	2.18
Hire a critical needs trained individual over a master's degreed individual	2.10

Are the schools doing everything they can to recruit new teachers? Based on the responses on a question on the survey asking what methods were currently being used to recruit teachers to the school districts, between 100% and 77.5% of the districts were using the recruitment methods identified on the survey, as shown in Table 4. The one exception was the out-of-state recruitment fairs that were only reported by about half (52.6%) of the respondents as a method of teacher recruitment. Many districts did report their use of more modern methods of recruitment such as web sites and online job banks. Other options reported outside of those identified included incentives, military, business and industry, and a network of vocational directors.

CONCLUSIONS

Is there really a need for business educators in South Carolina? The responses on the survey instrument show a need for business educators in the state of South Carolina. About half of the respondents felt that a shortage existed now and even more felt a shortage would exist for them in the next five years. Although all of the vocational administrators did not feel there was or would be a shortage, based on the number of openings identified and the small number of teachers in traditional certification programs in the state, there will be a shortage.

Table 4. Teacher Recruitment

Method	Percent
Newspaper ads	100.0%
Word-of-mouth	94.9%
State Job Fairs	86.8%
Visits or partnerships with colleges & universities	84.2%
School district web site	82.1%
Professional organizations	77.5%
On-line job banks	77.5%
Out-of-state Job Fairs	52.6%

Other: Incentives (1), Bus & Industry (1), Network of Vocational Directors (1)

How do school district personnel in the state relative to a traditional degree-granting certification route view critical needs certification? Although critical needs certification was seen as the solution for the shrinking job pool of business educators, this survey clearly identified the preference of vocational administrators to hire master's and bachelor's trained teachers over critical needs trained individuals. This does not directly address the problem of individuals who want the quick and easy route to certification; however, those individuals that want the best jobs in the best locations will likely, based on these findings, have a better chance with a traditional certification.

Although the findings show that traditional certification routes are most desirable, the fact remains that critical needs certification routes are very attractive to prospective teachers. Therefore, business educators need to clearly articulate to prospective teachers the weight and importance that district administrators place on traditional certifications. Some additional research by Miller, McKenna, and McKenna (1998) further finds that many alternative certified teachers feel slightly more unprepared for the classroom and are less confident particularly during their first year on the job. These findings may suggest that individuals looking for certification options should be cautious about quickly choosing an alternative certification path.

RECOMMENDATIONS

Business education programs throughout the nation should conduct similar surveys to determine the extent of the teacher shortage in their respective states. Research needs to continue in this area to determine if other states are experiencing similar findings. There are several areas of future research needed concerning the alternative certification versus the traditional certification procedure. How well do critical needs certified teachers actually perform in the classroom? How do the attrition rates of critical needs certified teachers compare to traditionally certified teachers? Are distance education models having an impact on the certification of teachers, and how do they compare with traditional and alternative methods? If other states find similar results from district personnel regarding alternative certification training, business educators need to find new ways to promote and deliver teacher training to those who want to enter the business education field. Only when we reach those who want to become teachers and provide information on how to become business teachers can we begin to address the critical need for teachers in South Carolina and the nation.

IMPLICATIONS

What are the implications for all business education programs nationally? Educators need to continue to promote their programs and find new ways to draw individuals into the teaching field. This may require a shift in how we train teachers and what training methods are used. Several institutions are now beginning to offer programs through distance education to take the training to the individual. This may be one option to allow individuals to stay at their current jobs and receive their traditional certification training without loss of income.

The certification of excellent business education teachers is the goal of all members of the educational community. The decisions made concerning alternative certification methods will have a 30-year impact on effectiveness in the business education classroom. Changes in certification requirements and procedures should be approached with caution. Traditional programs should continue to be strengthened, but there is also the need to examine possible solutions for effectively training more teachers with fewer resources and in a format that eliminates the barriers for non-traditional students trying to enter the teaching profession.

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Work-Based Learning Initiatives, Anticipated Benefits, and Stakeholder Involvement: A Survey of State School Administrators

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ABSTRACT

What work-based learning (WBL) initiatives are prevalent in a state that has a mandate to encourage career exploration? Do anticipated benefits relate to the choice of specific WBL initiatives? Have their goals been met? What is the role of administrators, teachers, students, teachers, and parents, and how does their involvement relate to the number of perceived benefits and initiatives? Respondents from the New Jersey State Association of School Administrators reported that "real problem solving in an academic classroom" and "career education" were the most frequently cited categories of initiatives. No one benefit appeared as a major driver. Teachers and administrators were the most involved of any stakeholder group, and parents were the least involved. The advisory council was the most used means for ensuring participation, and parent-teacher associations the least. An overall lack of planning for new initiatives was reported and may be attributed to school administrators not having been involved in statewide planning and parents (mis)understanding that WBL is not for the college-bound student. Recommendations for practice and future research are included.

The United States' educational system is under fire for being unresponsive to the needs of its students and society. To address this concern, student-centered, authentic learning initiatives are being developed (Perreault, 1999). As a school reform effort, many initiatives were developed in response to the 1994 School-to-Work Opportunities Act, as states were able to receive up to $10 million annually in federal grants to support such programs. However, the concept has been around for decades; John Dewey, in *Democracy and Education* (1916), pushed for "occupations as context for learning," as a means of instilling meaning in learning and was against the notion of vocational or academic tracking in schools. Dewey suggested that everyone could benefit from work-based learning (Rhoder & French, 1999).

Work-based learning (WBL) is used here synonymously with *school-to-work* (STW) to describe initiatives designed to increase students' engagement in learning as well as give all the higher order skills needed for future postsecondary education and/or employer-sponsored training (Berryman & Bailey, 1992; Hamilton & Hamilton, 1997). These learning initiatives have been touted as a means to instill meaningfulness in schoolwork and merge academic with vocational goals. Society wants to ensure that students are motivated to learn, are aware of the wide range of occupations that are open to them (and aware of what skills are needed in the work), and have marketable skills.

THE PROBLEM

The list of WBL initiatives includes career education, internships, and after school jobs. The overall goals of such programs are to integrate academic and career oriented studies; to emphasize learning in the context of specific, applied work tasks; and to tie student work activities—both paid and nonpaid—back to the classroom (Olson, 1997). These goals followed reports from the Secretary's Commission for Achieving Necessary Skills (SCANS) and the American Society for Training and Development (ASTD), which produced competency listings for high school graduates. The resultant, complimentary reports have been foundational for revising many high school curricula (Schliefer, Crisp & Held, 1996).

The proclaimed benefits that are driving the wide range of WBL initiatives include motivation for students to stay in school, improved employability, and a better awareness of higher education options (Bailey & Merritt, 1997; Doty, 1996; Gray, 1997; Jackson & Wirt, 1996; Stern, 1995; and Woloszyk, 1996). However, simply proclaiming the benefits of work-based learning has not been useful because WBL initiatives are often difficult to assimilate, and attempts to do so are often interpreted as attempts to interfere with the workings of a school or school district, even with federal funding (Stamps, 1996).

Initiatives may be accepted only when stakeholders—anyone that may be impacted—are highly involved. In the case of work-based learning initiatives, stakeholders are administrators, teachers, counselors, parents, students, the community, and potential employers. These stakeholders are ideally involved in the needs analysis as well as the development, implementation, and evaluation of the initiative. Stakeholder involvement, therefore, may be an underlying notion in understanding why some planned change efforts succeed and others do not.

Therefore, the purpose of this study was to describe WBL initiatives and document any linkage between specific initiatives, their anticipated benefits, and degree of stakeholder involvement in their planning and implementation. Specifically, the following questions were addressed:

Q1. What are the most important benefits that school administrators anticipate from their implementation of WBL initiatives?

Q2. What specific work-based learning initiatives are being implemented?

> Q2.1. To what degree do anticipated benefits relate to the choice of specific work-based education initiatives?
>
> Q2.2 What is the relationship between schools' key demographic variables and their choice of specific work-based education initiatives?

Q3. How involved are stakeholders in planning work-based learning initiatives?

Q4. What is the relationship between the number of anticipated benefits and the overall extent of stakeholder participation?

Q5. What strategies are school systems using to support stakeholder participation in work-based learning initiatives?

SIGNIFICANCE OF THE STUDY

Business educators are often leaders in WBL initiative development. Those planners who can articulate the benefits of work-based education and have developed ways to include the voices of all constituents in determining specific initiatives may be in the best position to succeed. The importance of stakeholder involvement is an assumption on which this investigation rests. People who participate in decisions regarding an innovation are more apt to buy into the innovation and thus ensure its acceptance and ultimate success. Because top administrators must often champion these initiatives, it was considered vital to determine the relative importance that they placed on anticipated benefits. Such data could help policy makers in determining not only the range of WBL programs but also key factors that may ensure their acceptance.

RELATED LITERATURE

This 1994-present literature review identifies issues related to successful implementation, the reported benefits of WBL programs, the multitude of initiatives currently in place, and the participation forums used to enable stakeholder involvement.

Issues Related to Successful Implementation

Issues related to successful implementation can be organized around the needs of stakeholders. For example, school administrators have reported that students' academic schedules must sometimes be rearranged to allow for work experiences (Schliefer, Crisp, & Held, 1996). Teachers must be convinced of the value of new classroom pedagogies and learn to implement them. And, in efforts to reduce instructional costs, there are often too few career counselors (Poczik study as cited in Bailey, 1995). Parents may resist any reform that may be [mistakenly] seen as precluding college for their children (Berryman & Bailey, 1992; Vo, 1997). High school students, in particular, often have busy schedules and they, too, must see the value of such learning experiences like an enhanced resume for prospective university admissions offices and/or employers. The community and employers often do not know how best to participate, and schools are often reluctant to include these stakeholders in establishing curricula and standards (Poczik study as cited in Bailey, 1995). Acceptance in one case was credited to students knowing what was expected of them and why they were participating as well as overall commitment of other stakeholders. Here, each student was part of a team that met regularly and included administrators, counselors, teachers, support staff, workplace mentors, and even university faculty (Rhoder & French, 1999).

Benefits of Workplace Learning Programs

From a review of books, government reports, and research studies, seven potential categories of anticipated benefits of WBL programs were identified. The first benefit, to improve academic teaching and learning, is among the most widely lauded, yet often the least likely reason for WBL initiatives to exist (Bailey & Merritt, 1997; Hall, 1995; Jackson & Wirt, 1996; Pomerenke, 1994; Rosenbaum, 1996). In one large-scale study of seventh graders, classroom speakers, discussions with adults, and academic class projects were among the top-ranked WBL activities (Larson & Vandegrift, 1998a). A second benefit is to upgrade existing occupational instruction, thus enhancing employability (Cappelli, 1996; Jackson & Wirt, 1996; McCabe, 1994; Normann, 1994). While in some instances, WBL initiatives are addressing the needs of skilled-labor shortages by attracting students who are not bound for college (School-to-work programs take off, 19[illegible]), the number of students who planned to take classes in high school that teach job skills has shown a significant decrease (Larson & Vandergrift, 1998a).

A third benefit that is often lauded is the desirability of integrating academic and occupational instruction (Bailey & Merritt, 1997; Gittleman, 1994; Jackson & Wirt, 1996; Rosenbaum, 1996). A fourth benefit, often the primary reason for WBL initiatives to exist (Hershey, Silverburg, et al., 1999; Larson & Vandergrift, 1998b), is to provide career exploration and orientation (Bailey & Merritt, 1997; Jackson & Wirt, 1996; Rhoder & French, 1999; Welch, 1994). Many such initiatives are spearheaded by industry groups, such as the National Restaurant Association and the Hospitality Business Alliance (Prewitt, 1996), or health care groups (Lajoux, 1996 b.). Of note, in one established program, mentoring by other adults was up, whereas mentoring by school personnel was down (Larson & Vandergrift, 1998a).

A fifth benefit is to link high school to postsecondary education or training (Bailey & Merritt, 1997; Gittleman, 1994; Jackson & Wirt, 1996). However, teachers have been reported to have limited awareness, understanding, and acceptance of WBL concepts, and administrators have reported that while their students were ill prepared to connect school and work, most indicated no plans to develop WBL opportunities for students (Keller, Owens & Clifford, 1998). A sixth benefit is to link students to specific occupations (Kapner, 1994; Krizan, 1996 (a); Lajoux, 1996 (b); Prewitt, 1996). The workplace opportunities that students get through school tend to be higher than those they find on their own (Hershey, Hudis, et al., 1997). The seventh benefit is to improve attitudes toward work and contribute to personal growth (Bailey & Merritt, 1997; Flynn, 1995; Gacka, 1996; Little, 1995; Porter & Bradwick, 1996; Rhoder & French, 1999; Walker, 1995).

A Multitude of Initiatives

The size of a school district, its access to resources, and the community in which it exists may actually expand or limit choices. Large urban public schools, for example, may have paid cooperative work programs and job placement services for part time employment. Rural schools, however, may be limited to tours of job sites (Theobald, 1996). Suburban schools may even have an advantage over their urban and rural counterparts, as they tend to have high degrees of parental involvement and at the same time access to city resources, including potential employers. Initiatives tended to fall under one of four major categories of (1) career awareness, (2) skill development, (3) work-like nonpaid experiences, and (4) paid work experiences. Using these organizing categories, Table 1 lists and defines a wide range of approaches to WBL. However, this list is not exhaustive, as numerous other new innovative initiatives are continually being implemented.

Stakeholder Participation Forums

What participation forums or strategies are being used to enable stakeholders to work together? In summary, the most frequently described participation forums were advisory councils that evaluate curricula, industry councils such as Food Service or Health Occupations that are working to prepare skill guidelines, community groups such as Big Brother/Big Sister or Junior Achievement that instill business skills, PTA councils to ensure that parents are part of their children's education; and individual student-teacher-parent planning sessions.

RESEARCH METHOD

This survey research project attempted to describe the efforts made by one state in implementing WBL initiatives. New Jersey was selected for investigation because its school districts were under a mandate that by the 11th grade, students were required to pick a career major for purposes of career exploration. Furthermore, career exploration and work experiences were to be mandatory for all juniors and seniors. The entire membership (571) of the New Jersey Association of School Administrators (NJSASA) was surveyed.

The Questionnaire

The first of the four-sections of the researcher-developed questionnaire was based on the categories identified in Table 1. Work Initiatives and Degree of Stakeholder Involvement consisted of questions designed to describe the extent to which the school system had implemented or planned to implement specific WBL initiatives. Also, the degree of stakeholder involvement in decision making with regard to each strategy was measured on a 7-point Likert scale, ranging from "not involved at all" to "involved in all phases." The

Table 1. Categorization and Definitions of Work-Based Learning Initiatives

Learning Initiative	Definition
1. **CAREER AWARENESS**	**Programs designed to make students aware of the wide range of occupations open to them**
a. Career education	Classes or seminars overviewing a wide range of career choices
b. Career fair	School-wide exhibition showcasing career options
c. Mentoring programs	Matching students with adult mentors in the community
2. **SKILL DEVELOPMENT**	**Opportunities to develop specific skills as part of classwork**
a. "Real" problem solving in academic classrooms	Teachers use work-based problems to motivate learning
b. Career academies	Schools within a school or separate small school organized around a broad career theme
c. Career majors	All students within a specific school explore a wide variety of careers, but organize their coursework around a broad career area
d. Tech-prep	Four year programs that combine the last two years of high school with the first two years of community college
3. **WORK-LIKE EXPERIENCES (NON-PAID)**	**Non-paid work outside of the traditional school curriculum**
a. School-based enterprises	Students "work" within the school
b. Service learning	Students provide services to the community
c. Internships	Students experience a variety of jobs outside the school
4. **EMPLOYMENT (PAID)**	**Work experiences where students receive money for work performed**
a. After school job placement	School helps student obtain jobs
b. Cooperative education	Part-time jobs offered as part of vocational training
c. Apprenticeships	Students learn specific skills while working with an adult who coaches

second section, Anticipated Benefits, was based on the benefit categories identified in the literature review. Respondents were asked to rank order the perceived value of anticipated benefits on another Likert scale, with 7 being the most important anticipated benefit, and 1 the least important.

The third section, Stakeholder Participation Strategies, was a check-sheet with open-ended options. Respondents were asked to identify the ways that they have encouraged/supported stakeholder participation. The fourth and final section, Tell Us About Your District, asked for the number of students in the district and whether the district was in an urban, suburban, or rural area. Respondents were invited to offer additional comments on the back page of the questionnaire booklet.

The draft questionnaire was reviewed for validity and ease of use by an expert panel of three school superintendents who were active in WBL initiatives in the state. Minor wording changes were made based on their recommendations. The revised questionnaire was then piloted to eight randomly selected individuals from the NJSASA list before going to the larger group, and again minor revisions were made.

The Data Collection Process

In early January 1999, the questionnaire was sent to each of the 571 members of the NJSASA, who was asked to either complete the form him/herself or have the individual in the district responsible for school-to-work programs respond. A stamped, self-addressed envelope was included with the mailing as well as a postcard that respondents returned separately, inviting respondents to obtain a copy of the study's findings. Also, by returning the card, respondents could be part of a lottery for a $100 bookstore gift certificate. To ensure anonymity, questionnaires were not coded in any way. Approximately three weeks later, a follow-up postcard was sent. A complete second mailing was sent in early March 1999. A total of 210 questionnaires was returned, for a response rate of 37%.

FINDINGS AND DISCUSSION

As shown in Table 2, 66% of the respondents were either the superintendent (47.2%) or the school-to-work coordinator (19%). A clear majority (62.2%) included secondary education and 61.7% were in suburban school districts. The overall response rate of 37% was relatively low; therefore, these data may not be representative of the entire state. Moreover, these respondents, who were then current members of the NJSASA, may not be representative of decision makers in the rest of the United States. However, respondents were overwhelmingly conversant in the topic as two-thirds were either the superintendent or the STW coordinator.

Table 2. Demographics of Respondents

Job Title		School District Type		Locale	
Superintendent	47.2%	Elementary	32.1%	Urban	21.2%
STW Coordinator	19.0%	K-12 and Secondary	62.2%	Suburban	61.7%
Other	33.8%	Other	05.6%	Rural	17.1%

Q1. What are the most important benefits that school administrators anticipate from their implementation of work-based learning programs?

Data in Table 3 are the means and standard deviations of seven rank-ordered benefits—anticipated goals and observed outcomes. While the standard deviation is relatively high, indicating that respondents differed as to which benefit was most anticipated or observed, no one benefit was overall considered more important than another; all were perceived at least moderately important, and the means were very close. In fact, the top-ranking of "provide career exploration and orientation" is consistent with the literature that suggests this benefit is the primary reason for WBL initiatives to exist. Only one item appears different from the rank ordered list of goals and outcomes as "provide links to specific occupations" appears as the second most important outcome, yet was second to the last of goals.

Table 3. Anticipated Benefits (Goals) by Mean and Standard Deviation in Rank Order by Goals Mean

	Goals		Outcomes	
Anticipated Benefits	Mean	SD	Mean	SD
Provide career exploration & orientation	4.417	2.153	4.472	2.183
Integrate academic & occup. instruction	4.348	1.855	4.225	1.784
Improve academic teaching & learning	4.333	2.124	4.073	2.218
Improve occupational teaching & learning	4.147	1.846	4.042	1.768
Link to postsecondary ed. or training	4.119	2.190	4.025	2.006
Provide links to specific occupations	4.074	2.225	4.292	2.132
Improve attitudes toward work	4.057	1.988	4.016	2.041

Q2. What specific work-based learning initiatives are being implemented?

Table 4 describes the extent to which WBL initiatives exist and are being planned for by the respondents. WBL initiatives are listed beginning with the most frequently reported to the least frequently reported. Note that the most prevalent of the initiatives is "real problem solving in academic classrooms," followed closely by "career education," which consists of classes or seminars covering a wide range of career choices. Career major, apprenticeships, and academies appear at the end of the list. Note, too, that the "plan" columns for all initiatives are small. Consistent with Keller et al's findings (1998), and despite a state mandate for career exploration and work experiences, most administrators did not plan to implement any new initiative.

Table 4. Implementation Time Frames for Work-Based Learning Initiatives

	In place	Plan <3mos	Plan 3-6 mos.	Plan 6-12 mos.	Plan>12	No plans
Problem solving	73.0%	1.1%	3.4%	5.7%	6.9%	9.8%
Career education	69.2	3.5	2.3	10.5	5.8	8.7
School-based work	64.9	0	1.7	1.1	4.6	27.6
After school job	53.2	1.7	.6	1.2	1.7	41.6
Cooperative educ.	53.2	0	0	0	2.3	44.5
Career fair	48.3	3.9	4.4	7.2	6.7	29.4
Service learning	47.8	1.7	4.4	3.3	7.8	35
Mentoring	44.6	1.7	1.7	8.5	5.1	38.4
Tech prep	35.6	0	1.1	2.3	6.8	54.2
Internships	32	4.1	0	2.9	5.8	55.2
Career major	23.7	1.1	1.7	2.8	10.2	60.5
Apprenticeships	23.0	1.7	.6	4.0	4.6	66.1
Career academies	16.8	1.7	1.1%	.6	3.9	76.0

Other explanations for this lack of planning appeared in the "additional comments" section of the questionnaire. Fourteen respondents, for example, said their districts were elementary-only and did not consider WBL efforts appropriate for their clientele. However, four respondents whose districts were elementary-level, were quite positive about the WBL efforts, saying, for example, "As an elementary school, K-6, we are creating an awareness of the wide range of options open to students. We are also concentrating on improving attitudes toward work and personal growth." Additionally, seven respondents said that while they were planning to introduce the program, they did not see implementation for more than 12 months. One respondent reported, "We have a new superintendent and a new director of guidance/schools to career coordinator. Planning has started, but implementation is in its first stages."

An explanation that came as a surprise was that four respondents said that WBL programs existed but only for special education students or vocational students. Four respondents also considered their districts as only for college-bound students and, therefore, they had no interest whatsoever in WBL.

An equal number of respondents (seven each) wrote comments that were either extremely positive or extremely negative about WBL initiatives. Representative of the negative comments follow: "There are too many requirements of schools to meet all state mandates without funding. Many of the mandates would seriously hinder the academic programs that students are attempting to complete. Content standards are putting additional pressure on students, staff, and districts." And, from another respondent, "We have no plans for this program nor do we intend to develop any. This program is unnecessary, poorly conceived, and a waste of instructional time. It is sure to be a failure since it has no support from school districts."

Representative of the positive comments was: "We have joined a consortium with two other nearby districts to work together to develop our curriculum," and "Our district has participated on a limited basis. The experiences have been positive...the school-to-careers office has sponsored meaningful workshops and projects."

Q2.1. To what degree do anticipated benefits relate to the choice of specific work-based education initiatives?

Pearson Product Moment Correlations (r) were used to examine and consider the strength and direction of benefits to specific work-based education initiatives. When using data from all respondents, and even when separately analyzing data from districts that only consisted of secondary schools, only one significant relationship emerged—the benefit of links to postsecondary education and training was positively related to career awareness initiatives—which, while logical, could be explained by pure chance. Anticipated benefits do not appear to be drivers for specific initiatives.

Q2.2 What is the relationship between schools' key demographic variables and their choice of specific work-based education initiatives?

Tables 5, 6, 7, and 8 reflect the relationships between schools' key demographic variables of type, location, and size with each WBL initiative; these data are grouped by categories of initiatives: career awareness, skill development, work-like experience, and paid employment.

While not unanticipated, these four tables show that substantial differences existed between type, location, and size of institution and the existence or plans for WBL initiatives. For example, the career education initiative (Table 5) tended to be a prevalent initiative everywhere. This would be anticipated because career education is perhaps the most basic of all initiatives. Likewise, career academies (Table 6) appear to be the least prevalent initiative perhaps due to a perception that these vocational-related initiatives would not help students meet general education goals, as suggested by Kohn (1997) and Cheney (1998), and by definition, are not appropriate for students at the elementary school level.

The relationship found between school district size and many of these initiatives was expected. The larger the district, the more opportunities for a wider range of WBL existed. For example, mentoring programs (Table 5) and paid employment initiatives (Table 8) show up mostly in large, urban, K-12 and secondary districts. Small, rural districts tended not to support such programs.

The most prevalent WBL initiatives identified earlier were problem solving in the academic classroom (Table 6), career education (Table 5), and school-based work (Table 7). Problem-solving in the academic classroom (Table 6) appears to be most prevalent in small, rural secondary institutions. However, the limited range suggests that problem solving is a universal strategy in K-12 and secondary level districts. Likewise, career education, as noted earlier, appears to be even a more tightly focused strategy across the board with all areas, including elementary, making career education an actively used strategy.

School-based work initiatives (Table 7) reflect an exception to the previous finding, as a wider range of implementation percentages is found within this category. The largest number of WBL initiatives, consistent with Theobold (1996), was in urban settings and at the K-12 and secondary level. However, respondents from these state rural districts described a strong (or stronger) percentage of initiatives in career awareness and skill development initiatives than their urban or suburban counterparts. This finding, however, differs from Theobold (1996), who suggested that rural schools were at a disadvantage for such programs. Moreover, rural districts were very closely aligned percentage-wise with the suburban counterparts with regard to planning for work-like and paid employment initiatives.

Career academies (Table 6) appear to be the least used initiative everywhere. When they did exist, they were in large districts that could support this specialized learning strategy; they were found to be equally distributed in urban, suburban, and rural areas.

Table 5. Type, Location, and Size of District and Percentage of Respondents Who Have or Plan to Implement Career Awareness Initiatives

		Career Educ.	Career Fair	Mentoring
	Elementary	86.3	56.4	32.1
TYPE	K-12 & Secondary	93.6	88.6	75.7
	Other	88.9	70	60
	Urban	97.1	91.4	82.4
LOCATION	Suburban	90.5	65.2	51.3
	Rural	89.3	71.4	50
	<2000	91.3	61.2	52.1
	2001-4000	91.5	79.6	66.7
SIZE	4001-6000	89.9	77.8	53.6
	6001-8000	89.9	89.9	77.8
	>8000	92.3	92.3	84.6

Table 6. Type, Location, and Size of District and Percentage of Respondents Who Have or Plan to Implement Skill Development Initiatives

		Problem Solving	Career Academy	Career Majors	Tech Prep
	Elementary	66.9	9.1	9.3	1.9
TYPE	K-12 & Secondary	97.2	29.7	51.8	66.7
	Other	90	40	70	50
	Urban	88.2	33.3	75.8	64.7
LOCATION	Suburban	91.7	32.3	21.9	41.8
	Rural	98.9	33.8	27.6	36.7
	<2000	86.2	23.5	32	34.7
	2001-4000	97.9	18.7	40.4	52.2
SIZE	4001-6000	89.9	32.2	33.3	66.7
	6001-8000	89.9	32.2	66.7	66.7
	>8000	92.3	46.2	76.9	76.9

Table 7. Type, Location, and Size of District and Percentage of Respondents Who Have or Plan to Implement Work-Like Initiatives

		School-Based	Service Learning	Internships
	Elementary	50	50	11.8
TYPE	K-12 & Secondary	82.7	73.2	59.8
	Other	81.8	54.5	54.5
	Urban	81.9	73.5	61.3
LOCATION	Suburban	30.4	64.3	33.1
	Rural	32.4	58.6	33.3
	<2000	67	61.6	34.7
	2001-4000	77.1	64.6	53.3
SIZE	4001-6000	77.8	66.7	56.6
	6001-8000	77.8	66.7	56.6
	>8000	91.7	76.9	83.3

Table 8. Type, Location, and Size of District and Percentage of Respondents Who Have or Plan to Implement Paid Employment Initiatives

		After School Job	Cooperative Work Experience	Apprentice-ships
	Elementary	2	2	11.8
TYPE	K-12 & Secondary	81.7	77.3	39.4
	Other	90.9	90	81.8
	Urban	75	81.8	48.4
LOCATION	Suburban	48.9	50.9	31.9
	Rural	37.9	44.8	39.6
	<2000	29.2	38.3	29.9
	2001-4000	74.5	70.2	35.6
SIZE	4001-6000	66.7	77.8	11.1
	6001-8000	91.7	92.3	61.5
	>8000	44.7	38.3	29.2

Q3. How involved are stakeholders in planning work-based education initiatives?

Fourteen initiatives were identified and scores describing the extent of each stakeholder group could range from 1 (little or no involvement) to 7 (high involvement), or a total range of 14 to 98. Mean scores ranged from 27 to 39 and median scores ranged from 24 to 40. Not all respondents reported the existence of every initiative. What is telling, then, from these numbers is that all external stakeholder involvement (parents, community, and potential employers), scored at or near the bottom of the list. Parents appear to be the least involved of any stakeholder group, followed by the community and potential employers. Also interesting is the relatively strong showing of student involvement.

Table 9. Mean and Median Scores (Totals) of Each Stakeholder's Involvement

Stakeholder	Mean	Median
Administrators	38.953	35
Teachers	39.654	40
Counselors	37.389	36
Students	33.801	24
Parents	27.512	24
Community	29.333	25
Potential Employers	30.450	26

Q4. What is the relationship between the number of anticipated benefits and the overall extent of stakeholder participation?

The correlations reflected in Table 10 show that only 4 significant relationships existed between benefits and overall participation, from a possible 28. It was earlier reported (Question 2.1) that perceived benefits were not significantly related to the existence of WBL strategies. Likewise, for the majority of the relationships seen in Table 10, perceived benefits were not significantly related to the amount of stakeholder participation. However, the four exceptions that appear are noteworthy and are discussed here.

The benefit of improving occupational teaching and learning is perhaps the most vocational benefit identified here, and it is significantly related to the amount of stakeholder participation in both skill development strategies and paid employment strategies. Skill development strategies, which include real problem solving in academic classrooms, career academies, career majors, and tech prep, almost by definition would require considerable stakeholder participation, and the same is true for paid employment experiences. The benefit of providing career exploration and orientation was, as could be expected, significantly related to stakeholder participation in career education initiatives. What is perhaps most interesting from these data is that the benefit of linking high school to postsecondary education and training is also significantly related to the amount of overall stakeholder participation in skill development initiatives, but not to paid employment. However, success in a paid internship program has been attributed to extensive stakeholder involvement (Rhoder & French, 1999). Respondents may not have seen how students' future learning goals could link to work-like experiences.

Likewise, it may be logical to assume that to put together the strategies defined, as career education—classes/seminars, fairs, or mentoring initiatives—would require resources in and beyond the school setting. Links to external, continuing learning entities—postsecondary institutions and corporate training—require the involvement of a larger constituency. Perhaps another explanation for all these relationships could be that stakeholder involvement would be high when observable outcomes result.

Q5: What strategies are school systems using to support stakeholder participation in work-based learning initiatives?

Given a list of seven possible stakeholder participation strategies, respondents were asked to check any and all strategies that were used to encourage/support participation in planning WBL initiatives, as well as to describe strategies that were not included on the list. As Table 11 shows, the most common strategies reported were those that were school-centered and two that included the student in the process (guidance counselor-student counseling sessions; and teacher-student counseling sessions). Advisory councils and parent-teacher organizations follow. These latter two strategies are rather conventional ways to get input—advisory councils are designed to get input from the community and parent-teacher organizations are ways for schools to get input from parents. Less traditional stakeholder groups, community groups and industry councils, follow. Consistent with other data that describe little parental involvement, the least used strategy reported was parent-student-teacher counseling sessions.

CONCLUSIONS

School administrators in New Jersey were targeted for this study as they were under a mandate that by the 11th grade, students must pick a career major for purposes of exploration. Moreover, work experiences of some type were to become

Table 10. Relationship Between the Number of Anticipated Benefits and Overall Participation of Stakeholders

Benefit	Career Educ. Stakeholder Tot	Skill Develop. Stakeholder Tot	Work-Like Exp. Stakeholder Tot	Paid Employ. Stakeholder Tot
Improve Academic Teaching and Learning	.0180 p=.832	-.0029 p=.973	.0510 p=.548	.0022 p=.980
Improve Occupational Teaching and Learning	.0064 .940	.2561 .002**	.0906 .289	.2242 .008**
Integrate Academic and Occupational Instruction	.0407 .635	.0929 .278	.0581 .498	.0103 .905
Provide Career Exploration and Orientation	.1835 .028*	.0686 .414	.0524 .533	-.0296 .725
Link High School to Post-secondary Education and Training	.0425 .626	.2025 .019*	.1078 .215	.1451 .094
Provide Links to Specific Occupations	.0839 .334	.1115 .198	.1179 .173	.0711 .413
Improve Attitudes Toward Work; Personal Growth	.0343 .687	.0472 .580	-.0074 .931	-.0015 .986

*p = < .05
** p = < .01

Table 11. Stakeholder Participation Strategies in Rank Order by Frequency and Percentage

Strategy	Frequency	Percentage
1. Guidance Counselor-Student Counseling Sessions	133	63
2. Teacher-Student Counseling Sessions	113	53.6
3. Advisory Council	101	47.9
4. Parent-Teacher Organization	99	46.9
5. Community Groups	76	36
6. Industry Council	57	27
7. Parent-Student-Teacher Counseling Sessions	48	22.7
Other	52	24.6

mandatory for all high school juniors and seniors. Therefore, it was assumed that these school districts would be rushing ahead in efforts to establish WBL programs.

However, this assumption was, for the most part, unrealized. While a good number of initiatives were currently in place, there was little or no effort toward establishing new initiatives. Reasons for this lack of planning can only be suggested, but data from this investigation may indicate that mandates (that may or may not have included local school administrators in their development) requiring WBL initiatives are not enough to push administrators into action. It appeared that many administrators and parents have not been convinced that WBL is, as John Dewey explained, a means of instilling meaning in learning, and is for everyone, not just vocational or special needs students. Furthermore, there appears to be limited input from stakeholders in planning (and implementing) the initiatives that did exist.

The most used forum for involvement was the traditional administrator-sponsored forum—the advisory council. Moreover, the stalwart of parental involvement forums, the parent-teacher association, emerged as the least involved of any forum in planning for WBL initiatives. In fact, data showed a lack of involvement by parents in WBL initiatives across the board, as they were the least involved of any stakeholder group. The only place parents emerged with a significant link was with benefits related to postsecondary learning or training. It appears that parents are resisting programs that have any hint of vocational learning in them. This finding is consistent with those from Berryman & Bailey (1994) and Vo (1997), who found that parents [mistakenly] see workplace learning as precluding college for their children.

RECOMMENDATIONS

A premise of this investigation was that WBL initiatives, to succeed, must be linked to academic as well as vocational benefits. Simply articulating these linkages is not enough; no good idea will succeed on its own merit. To succeed, initiatives need to be developed that have a large, diverse stakeholder base to support them, and emphasize the roles of parents. Planners also need to develop ways to include stakeholders who are external to their schools—away from the traditional advisory council, and toward student- and parent-led strategies.

Research building on this study could be qualitative in nature, depicting case studies of best practices that could serve as models for effective WBL programs. If the assumption is that student-centered, authentic learning is a goal, successful programs need to be systematically examined and reasons for their success documented. Additionally, and in retrospect, one key group of stakeholders was somehow missing from this investigation. College/university administrators and faculty can play a role in planning for WBL initiatives and can be links to careers, real problem solving, and further study. Moreover, the involvement of higher education administration and faculty in planning for WBL initiatives might send a strong signal that WBL is for all students, regardless of whether college or corporate training is their next step beyond high school.

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Assessment of Six Career Development Factors from a Social Cognitive Theoretical Perspective

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ABSTRACT

This study was designed to test and validate the initial use of the Career Development Self-Efficacy Scale (CDSES) that focused on fundamental career development issues. Career self-efficacy beliefs relative to six factors related to career development among undergraduate students were examined. The career self-efficacy factors (a) options, (b) information, (c) exploration, (d) assessment, (e) plan development, and (f) plan modification were also used to measure the level of career self-efficacy among undergraduate students. In addition, this study examined gender and race differences in career self-efficacy in relation to six career self-efficacy factors.

The empirical results suggest that the CDSES is a valid and reliable instrument that can be used to measure six career self-efficacy factors related to fundamental career development issues. Women reported statistically significant less career self-efficacy for investigating career options and using career information than men, resulting in a significant gender difference for the total CDSES. Of methodological interest was the finding that non-white students possessed a statistically significant higher level of career self-efficacy than white students on all six factors.

INTRODUCTION

Career success is dependent upon confidence in ability to navigate fundamental career development issues. Career development as proposed by the National Vocational Guidance Association and American Vocational Association (Joint Position Paper, 1975) is "the total constellation of psychological, sociological, education, physical, economic, and chance elements that combine to shape the career of any given individual." Social cognitive theory provides a useful framework for guiding the examination of the efficacy beliefs in relation to the combined factors that contribute to an individual's career success.

Social cognitive theory (Bandura, 1986, 1997) defines self-efficacy as personal beliefs about one's ability to successfully engage in a specific behavior. According to Bandura (1986, 1997) a person's belief system about confidence in ability to perform necessary action to achieve a desired outcome is important. Successful experiences produce strong, realistic personal self-efficacy beliefs, while failures tend to weaken the personal belief system. Betz and Hackett (1986) first used the phrase career self-efficacy "as a generic label for self-efficacy expectations in relation to the wide range of behaviors necessary to the career choice and adjustment processes" (p. 280). Strong career self-efficacy beliefs may motivate students to seek knowledge about career options, use career information wisely, and participate in career exploration activities. Career self-efficacy may also be an influential component in the assessment, planning, and modification of a solid career path.

NEED AND PURPOSE

The application of social cognitive theory to career development has generated much research, primarily as it refers to the self-efficacy construct. Betz and Hackett (1981) first used social cognitive theory to explain gender differences in career choice. Recent self-efficacy research has focused on career decision-making (Luzzo & Day, 1999; Solberg, Good, Fischer, Brown, & Nord, 1995), career search (Solberg, Good, Nord, Holm, Hohner, Zima, Hefferman & Malen, 1994), and career barriers (Albert & Luzzo, 1999; Lent, Brown, & Hackett, 2000). Career self-efficacy with respect to the foundation of career development has not been investigated. Despite promising results in the advancement of women's career development, fundamental career issues still warrant investigation (Farmer, 1997; Hackett, 1997). Furthermore, there is a lack of empirical information about the career behavior of minorities (Brown, 2000; Fouad & Bingham, 1995). Social cognitive career theory (Lent, et al., 1994, 1996) classifies career self-efficacy as a dynamic aspect of the self-belief system that is specific to a given performance domain. Therefore, to conceptualize career development, this study was designed to test and validate the initial use of the Career Development Self-Efficacy Scale (CDSES) that focused on fundamental career development issues. The research examined career self-efficacy beliefs relative to six factors related to career development among undergraduate students. In addition, this study examined gender and race differences in career self-efficacy in relation to six career self-efficacy factors.

The six factors are: (a) awareness and investigation of career options, (b) utilization of career information, (c) career exploration activities, (d) assessment of the relationship between educational achievement and career planning, (e) development of individual career plan, and (f) review and modification of individual career plan. Based on an undergraduate population used in this study, the following research questions were generated:

1. Are the six career self-efficacy factors distinct and valid?
2. Are differences in career self-efficacy (confidence) levels related to the six factors?
3. Are gender differences in career self-efficacy related to the six factors?
4. Are racial differences in career self-efficacy related to the six factors?

RELATED LITERATURE

The literature review is composed of seminal studies that have contributed to the recognition of the career self-efficacy construct within the field of career development. Studies that addressed issues related to assessment of career self-efficacy beliefs are also presented in this section.

Seminal Studies

Empirical research by Hackett and Betz, (Hackett & Betz, 1981; Betz & Hackett, 1981, 1983) were the first studies to examine gender differences in career self-efficacy among undergraduate students. These early studies consistently found that women possessed lower career self-efficacy for traditionally male occupations. Because of differential gender socialization, women possess a lower degree of career self-efficacy resulting in fewer opportunities to reach their full career potential. Hackett and Betz (1981) proposed that sex role socialization into feminine occupations provide less access to important resources necessary in the development of strong self-efficacy beliefs for career achievement and success.

The first study to replicate the Betz and Hackett (1981) study was conducted by Post-Kammer and Smith (1986) with a population of college-bound eighth and ninth grade students. Gender differences in confidence to complete educational requirements and ability to perform job duties of traditionally female and male occupations were analyzed. Some occupations revealed gender differences; however, the junior high school students did not display as many differences in self-efficacy as the undergraduates did in the Betz and Hackett study.

Career Self-Efficacy Assessment

Betz, Harmon, and Borgen (1996) developed the Skills Confidence Inventory (SCI) to measure perceived self-efficacy with respect to the six Holland (1985) theme areas. The six themes, Realistic, Investigative, Artistic, Social, Enterprising, and Conventional, were categorized into scales that each contained 10 measurement items. The SCI measured perceived confidence for school subjects and activities related to each of the six Holland themes. The Skills Confidence Inventory was administered to 706 college students and 1,147 adults. Among the college students, men reported more confidence for the Realistic, Enterprising, Investigative, and Conventional themes than women. Women college students reported significantly more social confidence than men college students. In 1999, Betz, Schifano, and Kaplan reported similar findings as in the Betz et al. 1996 study.

Osipow, Temple, and Rooney (1996) developed the Task Specific Occupational Self-Efficacy Scale (TSOSS) to assess self-efficacy expectations for specific tasks that are required across occupations. The items were developed from the description of work skills taken from the 66 occupational groups described in the Dictionary of Occupational Titles (U. S. Department of Labor, 1981). The TSOSS consists of four scales: Verbal, Quantitative, Physical, and Aesthetic. Betz, Schifano, and Kaplan (1999) found statistically significant gender differences on the TSOSS factors, with college men scoring significantly higher on the Quantitative and Physical factors in comparison to college women. No gender differences on the Verbal or Aesthetic factors were found.

The Kuder Task Self-Efficacy Scale (KTSES) developed by Lucas, Wanberg, and Zytowski (1997) was designed to measure self-efficacy for specific occupational tasks. The KTSES corresponded with Kuder Occupational Interest Survey's 10 interest areas of artistic, musical, mechanical, scientific, outdoor, clerical, computational, literary, service, and persuasive (Kuder & Zytowski, 1991). Examination of gender differences found men had significantly higher self-efficacy for mechanical, outdoor, and computation. Women reported higher self-efficacy beliefs for social and clerical. No gender differences were found for artistic, musical, scientific, persuasive, and literary.

METHOD

Participants

Two hundred and eighty-nine undergraduate students (122 women and 167 men) participated in this study. Students were separated into two racial categories: white (83%) and non-white (17%). The students were predominately sophomores (59%); followed by juniors (17%), freshmen (15%), and seniors (9%). The mean age was 19.23 (SD = 1.89). Although primarily business majors (63%), seven other academic departments (applied science and technology, architecture, honors, fine arts, sciences and humanities, teachers college, and communications) were represented.

Instrumentation

Twenty-seven items for the Career Development Self-Efficacy Scale (CDSES) were generated for six career self-efficacy factors from a review of related literature, the National Career Development Guidelines (National Occupational Information Coordinating Committee [NOICC], 1989), and Ohio's Occupational Competency Analysis Profiles (OCAP, 1995). The six career self-efficacy factors were: (a) options (e.g., determine interest and attitudes), (b) information (e.g., identify a range of career information resources), (c) exploration (e.g., describe the impact of exploration activities on current career choices), (d) assessment (e.g., explain the importance of possessing educational skills in the workforce), (e) plan development (e.g., establish career goals), and (f) plan modification (e.g., change career goals and educational plans). The career exploration, educational/career assessment, career plan development, and career plan modification factors were each measured by four competencies. Career options were measured with five competencies, and career information was measured with six competencies.

Participants indicated their current level of confidence on a 5-point Likert scale from not at all confident (1) to completely confident (5). The scale included a significant number of competencies that go beyond simple skills to reflect the complexity of behaviors needed for career success. An attempt was made to ensure that the measure reflected moderately specific and challenging components of career development.

A panel of business educators who had extensive expertise in research related to career development assessed content validity. The panel examined the items to determine whether they were reflective of relevant career development competencies. On the basis of feedback, confusing items were revised and unnecessary items were eliminated. The instrument was pilot tested with 10 students during a five-week summer session. The students were asked to provide comments about the clarity and comprehensiveness of the items. Moderate alterations were made to improve clarity. For this study, an internal consistency coefficient of .95 was established for the total scale. The coefficient alphas for the factors were as follows: career options (.84), career information (.86), career exploration (.80), educational/career assessment (.80), career plan development (.79), and modify career plan (.77).

Procedure and Data Analysis

Data collection occurred at the beginning of a 16-week computer applications course designed for business majors. The researcher solicited voluntary participation to complete the Career Development Self-Efficacy Scale, demographic information, and a consent form. Identification numbers were used to ensure participant confidentiality.

Using Amos 3.6 (Arbuckle, 1997), a statistical software application, confirmatory factor analysis (CFA) was performed to explore the patterns of relationships among the variables and establish scale validation for the specified constructs (Hair, Anderson, Tatham, and Black, 1998). The fit indices used for the proposed confirmatory factor solution were the likelihood ratio chi-square statistic (χ^2), normed chi-square, the root mean square error of approximation (RMSEA) the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), and the comparative fit index (CFI). The χ^2 statistic should be nonsignificant, the normed chi-square should be greater than 1.0 but less than 3.0, and values between .05 and .08 are considered acceptable for the RMSEA. According to Hair, Anderson, Tatham, and Black (1998), there is no absolute value indicating an acceptable level of fit for the GFI, AGFI, and CFI; however, .90 is generally the recommended value. Cuttance (1987) considers values above .80 as an acceptable level of fit.

Confidence levels for the career self-efficacy factors were analyzed using descriptive statistics, including mean scores and standard deviations. Significance was determined by using a two-tailed probability t-test set at the .05 level to examine gender and racial differences among the career self-efficacy factors.

FINDINGS

Confirmatory factor analysis (CFA) was used to test for distinction and validity of the six career self-efficacy factors as proposed in the first research question. The goal of CFA is to test the assumption that the latent variables representing six career self-efficacy factors were six distinct factors, having discriminant validity. The fit indices used in this study indicated that the factors were distinct and an appropriate fit was achieved. The χ^2 was nonsignificant (χ^2 (309, N = 289) = 569.99, $p > .01$), the normed chi-square was 1.845, and the RMSEA was .08. The data fit fairly well with a GFI of .81, AGFI of .80, and CFI of .86.

Factor loadings, which represent the correlation of each variable and the factor, are considered significant at ± .30 or higher (Hair, Anderson, Tatham, and Black, 1998). Twenty-six of the 27 items produced factor loadings of .63 or higher. Only item 27, which stated, "I am confident that parents can provide input into my individual career plan process" produced a factor of .48.

Table 1 presents the number, mean, and standard deviation for the second research question. Based on a 5-point scale, the overall scale confidence mean for the six career self-efficacy factors was 3.84. Participants displayed the greatest confidence for the assessment factor. (4.06), followed by plan development (4.03), and options (3.98).

Table 1. Career Development Self-Efficacy Scale Descriptive Statistics N = 289

Scale	M	SD
Scale Total	3.84	.54
Options	3.98	.61
Information	3.54	.72
Exploration	3.79	.62
Assessment	4.06	.59
Plan Development	4.03	.63
Plan Modification	3.79	.62

Table 2 provides the independent t-test for the third research question. Gender differences were found for the total scale (t = 2.06) and career options (t = 2.01) at the 0.05 level. At the .01 level, gender differences were found for the career options information (t = 2.77) factor.

For the fourth research question an independent t-test was performed to test for significant difference at the .05 level. A statistically significant difference at the .001 level for the total Career Development Self-Efficacy Scale was found for race. All six career self-efficacy factors were statistically significant for race.

Table 2. Gender Differences for Career Development Factors

	Women		Men		
Factor	M	SD	M	SD	t (287)
Scale Total	3.77	.57	3.90	.51	2.06*
Options	3.90	.63	4.03	.59	2.01*
Information	3.41	.76	3.64	.67	2.77**
Exploration	3.75	.62	3.82	.63	.99
Assessment	4.00	.58	4.10	.60	1.43
Plan Development	3.98	.72	4.08	.56	1.33
Plan Modification	3.73	.67	3.83	.59	1.38

*p < .05
**p < .01

Table 3. Race Differences for Career Development Factors

	Non-white		White		
Factor	M	SD	M	SD	t (287)
Scale Total	4.10	.55	3.79	.52	-3.69***
Options	4.22	.58	3.93	.60	-3.16**
Information	3.82	.70	3.48	.71	-3.05**
Exploration	3.97	.70	3.75	.60	-2.20*
Assessment	4.29	.56	4.01	.59	-3.02**
Plan Development	4.42	.56	3.95	.62	-4.90***
Plan Modification	3.98	.69	3.75	.61	-2.36*

*p < .05
**p < .01
***p < .001

DISCUSSION AND IMPLICATIONS

The present study was an assessment of six factors relevant to career self-efficacy beliefs in the beginning stages of the career development process. The empirical results suggest that the Career Development Self-Efficacy Scale (CDSES) is a valid and reliable instrument that can be used to measure six career self-efficacy factors related to fundamental career development issues. A panel of experts and the confirmatory factor analysis provided validity for six distinct career self-efficacy factors. However, there are limitations associated with the sample composition and size. The use of an undergraduate sample from one geographic area limits the generalizability of the study results. Initial results of this study suggest that career self-efficacy mediates the development of a solid career foundation. Self-efficacy may also be an important variable to consider in the career development curriculum. Supplementing career development curriculum with confidence-building events that identify the transitional importance of options, information, exploration, assessment, planning, and modification may strengthen students' ability to recognize essential aspects of their individual career development path. The inclusion of self-efficacy building events into career development programs may positively affect subsequent career-related behaviors (Betz & Hackett, 1986).

Results indicated that both genders displayed a high level of self-efficacy in their ability to assess the relationship between educational achievements, develop an individual career plan, and investigate career options. Despite insignificant gender differences for several factors in the current study, the topic of gender still deserves serious attention. In this study, women reported significantly less career self-efficacy for investigating career options and using career information than men, resulting in a significant gender difference for the Career Development Self-Efficacy Scale total. Previous studies have reported that women under-utilize their abilities and talents in career pursuits (Betz & Hackett, 1981; Hackett, & Betz, 1981). Differential sex-role socialization results in gender differences in self-efficacy that influence career-related behaviors and choices of young women (Betz & Hackett, 1986). Providing adequate career guidance is a major role of the business educator at the secondary level. Career development curriculum must provide experiences for women to build confidence in exploring career information and opportunities. Business educators need to encourage women to challenge limiting self-efficacy beliefs in order to achieve equitable career success.

Of methodological interest was the finding that non-white students possessed a significantly higher level of career self-efficacy than white students on all six career self-efficacy factors. Social cognitive theory (Bandura, 1986) assumes that the most convincing self-efficacy beliefs are those that slightly exceed current skill level. Modest over-confidence encourages people to engage in challenges that promote skill development and self-efficacy (Bandura, 1986). Although this finding should be replicated and analyzed in more detail before considered generalizable, it has potentially important implications for business educators. Business educators need to implement career development programs that encourage confidence, but also instills realistic appraisal of students' abilities. Career self-efficacy assessments in combination with appropriate feedback may help students discover their competence range, thereby enhancing the school-to-career transition. In addition to the career self-efficacy beliefs special to women and non-whites, career development programs should focus on individual career self-efficacy and developmental issues, so that all students can reach their full career potential.

RECOMMENDATIONS FOR FUTURE RESEARCH

First, a study is needed that determines the applicability of the six career self-efficacy factors used in this study to high school career development programs. Most importantly, the study should examine how the introduction of the factors impact career self-efficacy beliefs after program participation.

Future research needs to be directed toward testing the validity and reliability of CDSES using diverse samples from different geographic areas. The issue of generalizabilty must be thoroughly examined; a larger culturally diverse sample may provide additional information about career self-efficacy beliefs specific to high school, non-college bound, and undergraduate students.

The examination of how gender and race influence career self-efficacy warrants further investigation. Future research using a quantitative method in conjunction with a qualitative method could reveal how personal variables (e.g., gender and race) modify career self-efficacy. Future efforts should also be directed toward sophisticated causal-modeling procedures. Complex statistical models will allow for a detailed investigation of the personal variables affecting career self-efficacy.

In summary, business educators share the responsibility of career preparation with their students. As outlined in the National Standards for Business Education (1995), "business educators play a prominent role in developing the knowledge, skills, and attitudes necessary for students to succeed in the workforce." (p. 1). Therefore, it is vital to consider career self-efficacy as a major mediator in the career development process. Strong self-efficacy beliefs, for the six career self-efficacy factors used in this study, may strengthen the career path. More attention to assessment of career self-efficacy, particularly among women, may contribute to the achievement of career success.

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Needed Workplace and Computer Skills: A Regional Study

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ABSTRACT

This study was designed to determine the importance, the current level, and the desired level of basic SCANS (Secretary's Commission on Achieving Necessary Skills) workplace skills and computer literacy skills for entry-level, nonbaccalaureate-degree employees in the computer industry of Silicon Valley, Santa Clara County, California. A survey instrument using the SCANS workplace skills as a framework and a five-point Likert-type scale was mailed to a random stratified sample of Silicon Valley computer company supervisors. Findings included a ranking of basic workplace and computer literacy skills and a measurement of the gap between current and desired levels of the workplace skills by small-, medium-, and large-size companies. Major recommendations included the following: All entry-level employees should be prepared to use a computer on the job. Local educational institutions should be preparing their graduates in those skills ranked highest by local computer industry employers and especially in those skills demonstrating the largest gap between desired and current levels. These skills are displaying responsibility, knowing how to learn, solving problems, listening, speaking, organizing information, writing, reading, serving clients/customers, and participating as a team member.

Today's workplace appears to require a different skill set than in the past, attributed to various reasons such as globalization of commerce and the explosive growth of technology on the job. The new workplace is a world of fast communications and information, rapid decision making, and intelligent social skills that are needed to deal with economic, technical, and ethical issues identified with complex problems facing every economic system (Nijhof, 1998). The current educational system has become the focus of criticism for not preparing its graduates adequately to enter the workforce.

Estimates of the percentage of employees with insufficient levels of basic skills range from 20 to 40% (Bergmann, 1995; National Center for the Educational Quality of the Work Force, 1995). According to a national survey of over 13,000 private organizations in the United States (Training, 1997), 36% of U.S. companies' $58.6 billion training budgets ($21.1 billion in 1996) is spent on training for production workers, service workers, and administrative employees. Employers increasingly discuss the importance of new skills crucial to employees' ability to work effectively, such as knowing how to learn, interpersonal skills, applying reading, writing, and computing basic skills to workplaces, ability to work in teams or groups, effective listening and communication skills, adaptability and flexibility, personal management skills, personal and workplace ethics, leadership or initiative, and the ability to think and to solve problems in the workplace (Alpern, 1997; Clagett, 1997; Evers, Rush, & Berdrow, 1998; Stasz, Ramsey & Eden, 1995). Our nation's employers complain that new hires do not have the right skills (Esque & Gilbert, 1995). "Our present education system does not prepare students to enter a workforce that has been drastically altered by the globalization of commerce and industry, and the explosive growth of technology on the job" (Secretary's Commission on Achieving Necessary Skills, 1991).

Today's workplace demands more than competency in the three R's. Employers want a new kind of employee with broad skills and strong foundation skills to facilitate learning on the job (Carnevale, Gainer, & Meltzer, 1988). New skills such as teamwork, cooperation, problem solving, and interpersonal skills—sometimes referred to in the literature as "soft" or "people" skills—are being identified by employers as essential for successful employment in the new economy, in addition to increased basic math, language, and technological skills (Carnevale, Gainer, & Meltzer, 1988). One information technology professional explains, "soft skills are important. They're even more important than computer skills because people can learn those on the job. But interpersonal skills, critical thinking skills—those are the foundations that allow you to grow as a professional" (Wilson and Rockstroh, 2000, p. 43). A relatively new entry to the list of basic skills is a basic knowledge of computers, according to Murnane and Levy (1996). In 1984, 26% of the work force used computers on the job. In 1993, the comparable figure was 48%. In 1997, the U.S. Census reports 49.8% of employees over 18 in the United States use a computer at work (U.S. Census Report, 1997). It appears that California figures may be slightly higher than national figures. "Wired Workers," those who use computers either frequently or relatively frequently every day, make up 57% of the workforce in California (Magid and Associates, Inc., 1998). Over the past three years, the business services industry in California, an industry with many computer-related occupations, has added over 200,000 jobs (California Employment Development Department, 1998). Studies such as these confirm the importance of job seekers to be prepared and knowledgeable about these skills in order to be employable in today's economy.

Recent federal legislation and funding, such as School-to-Work and Tech Prep, have resulted in awareness and discussion at the secondary school level as to how best to prepare students for living and working in a rapidly changing world. Among the components identified as fundamental are work-based learning, internships, technology skills, computer competencies, higher standards in academic subjects, closer linkages between school and work, and the integration of academic and vocational education (Vocational-Technical Education: Major Reforms and Debates 1917 - Present, 1993, p. 17).

In 1991, one of the most comprehensive studies to date was undertaken to identify the necessary work skills for competent employees. Industry and education representatives participated with the Secretary of Labor on the Secretary's Commission on Achieving Necessary Skills (SCANS) to determine the skills young people need to succeed in the world of work. The SCANS report documented the following necessary skills and competencies: basic skills, thinking skills, personal qualities, resources, interpersonal skills, information, technology, and systems as necessary for all secondary students, both those going directly to work and those planning further education. The SCANS report documented the necessary work skills for all entry-level workers on a national level; it did not address the local level.

BACKGROUND

To understand the framework for this study, two broad areas in the literature were reviewed: (a) basic skills sought by employers in entry-level employees and (b) the skills gap as reported by governmental, educational, industry, and popular reports that have called attention to the widening division between what is taught in school and what is needed in the workplace.

The "literature analyzing changes in skill requirements [for the workplace] goes back at least to Adam Smith" (Cappelli et al., 1997, p. 154). Certainly not a new concept, the skills gap and the significance of workplace basic skills is becoming a problematic educational and economic topic and appears to be demanding more attention today than in the past (Cappelli & Rogovsky, 1995). However, in general, "companies report that only about 50% of recent high school graduate applicants are qualified for entry-level positions" (Cappelli et al., 1997, p. 157).

In the past, many employers indicated that they wanted workers who were prompt and would follow orders. Now, many state that they want workers who can solve problems, work in more ambiguous and less well-defined circumstances, and take initiative and responsibility (Bailey, 1995; Murnane & Levy, 1996; Stasz, Ramsey, Eden, Melamid, & Kaganoff, 1996). Workers are now asked to use judgment, make decisions, work as a team member, communicate effectively both verbally and in writing, possess the necessary computation skills, and think creatively (Richens, 1999). Among today's workers, problem solving, analytical skills and teamwork are in high demand—and short supply (Swasey & Hymowitz, 1990). Employers want employees who have a good work ethic and appropriate social behavior; and for the future, workers who have shown a capacity to think, learn, work effectively alone and in groups, and solve problems (National Center for Research in Vocational Education, 1998).

The review of the literature contained many points of view concerning the basic skills and competencies necessary for employees entering today's workforce (Ascher, 1988; Drummond, 1997; Joyce & Voytek, 1996; Natriello, 1989; Survey of Georgia Employers, 1996). The apparent gap between the skills that are needed and the skills being provided is backed by numerous studies, reports, and opinions from industry, education, and society (Building a Quality Workforce, 1988; Cappelli et al., 1997; Cappelli & Rogovsky, 1995; Hanser, 1996; Kolde, 1991; Richens, 1999; Sanchez, 1996; USA Today, 1997; Vasu & Frazier, 1989). A recurring theme throughout the literature is the changing workplace is requiring new and different skill sets, resulting in a lack of new employees possessing the desired competencies (Bailey, 1997; Cappelli & O'Shaughnessey, 1995; Carnevale et al., 1988; Dolainski, 1997; First Findings, 1995; Martin, 1991; Miles, 1994; Murnane & Levy, 1996; Richens, 1999; Stasz, Ramsey, Eden, Melamid, and Kaganoff, 1996; Swasy & Hymowitz, 1990). In response to rising concerns, in 1991 the SCANS commission, using a panel of experts from education, government, and industry, identified the essential workplace skills and competencies needed by all students in order to succeed in the new workplace. Subsequent studies and reports have attempted to document the necessity of the workplace skills identified in this landmark study (Cappelli & Rogovsky, 1995; Drummond, 1997; Harris, 1996; Miles, 1994; Overtoom, 2000; Richens, 1999; Sanchez, 1996; Wilhelm, 1998).

PURPOSE AND RESEARCH QUESTIONS

If educators are to prepare students for entry-level employment in a radically different job market than even a decade ago, they must know employer expectations (Nellermore, 1992). Several studies have been undertaken in the past few years to determine the desired skills for entry-level workers in specific parts of the country and for particular industries such as mining, nursing, manufacturing, and office workers (Anderson, Pennsylvania; Butts, Arkansas; Fanno, Oregon; Harris, Oklahoma; Hough, Alaska; Perry, Georgia; Schlange, Missouri; Stephens, Smith, et al, Indiana; Williams, Colorado).

The problem addressed in this study is the lack of reports of studies investigating the importance of basic entry-level work skills to the computer industry, and specifically, to the Silicon Valley area in California. The Silicon Valley computer industry represents one of the largest employer groups in Santa Clara County. Are these basic work skills important to the local computer industry, what is the desired skill level, and are current employees meeting those expectations?

This study focused on the basic skills and competencies defined by the SCANS report to include three "foundational skills" (basic reading, writing, and math; thinking skills; and personal qualities) plus five "competencies" (technology, systems, information, interpersonal relations, and use of resources). Because the SCANS technology competency specifies computers and related technology and many secondary schools now require computer literacy to graduate, and because of the ubiquity of the computer in the workplace, questions were framed to determine what components of computer literacy are important in entry-level employees in the Silicon Valley, California, computer industry.

This study was delimited to the Silicon Valley, California, computer industry, which currently comprises approximately 16% of the total businesses in Santa Clara County, California. According to Rich's Business Directories Inc., published in 1998, there were 9,054 companies located in Santa Clara County, 1,461 of which were computer-related businesses.

The purpose of this study was to determine the importance, the current level, and the desired level of basic SCANS workplace skills and computer-literacy skills in entry-level, nonbaccalaureate-degree employees in the computer industry of Silicon Valley, Santa Clara County, California. The results of this study will provide data for academic and vocational educators to better prepare students. Are those essential workplace skills desired by Silicon Valley computer industries the same basic skills and competencies identified by the employers who formulated the SCANS skills in 1991? Is there a discrepancy or gap between current entry-level skills and desired levels of competency in entry-level employees? Additionally, the results from this study will be of particular interest to Silicon Valley employers and educators, as well as to interested individuals in other areas of the country with a comparable high-tech, high-growth computer industry base and comparable population.

Specifically, the following research questions were answered about the desired and current basic workplace and computer literacy skills of entry-level, non-baccalaureate degree employees in the Silicon Valley, California, computer industry.

1. What is the estimated availability of entry-level positions?
2. What is the most reported entry-level job title?
3. What is the minimum educational level for the entry-level, nonbaccalaureate-degree job described?
4. How important are specific computer-literacy skills for entry-level, nonbaccalaureate-degree employees?
5. Is there a difference in perceived importance of specific computer-literacy skills for entry-level, nonbaccalaureate-degree employees of the Silicon Valley, California, computer industry according to size of company?
6. How important are the eight SCANS workplace competencies and skills for entry-level, nonbaccalaureate-degree workers as identified by hiring supervisors?
7. Is there a difference in perceived importance of the eight SCANS workplace competencies for entry-level, nonbaccalaureate-degree workers as identified by the hiring supervisors of the Silicon Valley, California, computer industry according to size of company?
8. What is the desired level of basic workplace skills among entry-level, nonbaccalaureate-degree employees in the eight SCANS competencies as perceived by the hiring supervisors?
9. What is the current level of basic workplace skills among entry-level, nonbaccalaureate-degree employees in the eight SCANS competencies as perceived by the hiring supervisors?
10. Is there a difference between desired levels and current levels of basic workplace skills for entry-level, nonbaccalaureate-degree workers as perceived by the hiring supervisors?
11. Is there a difference between desired levels and current levels of basic workplace skills for entry-level, nonbaccalaureate-degree workers as perceived by the hiring supervisors of the Silicon Valley, California, computer industry according to size of company?

METHODOLOGY

Population and Sample

The population for the study consisted of approximately 1,696 businesses associated with the computer industry in Silicon Valley, Santa Clara County, California, whose primary function is to manufacture, sell, or supply computer components, including hardware, software, firmware, networks, printers, scanners, silicon chips, semiconductors, and other computer peripherals. All companies with 11 or more employees were selected and stratified into groups of small (11-100 employees), 723 companies; medium (101-250 employees), 128 companies; and large (more than 250 employees), 95 companies. Companies with under 11 employees were excluded from the study after a telephone survey of 40 such companies indicated that 75% of the companies had not hired a new employee in the past year.

The study sample consisted of 331 computer industry companies to which 777 surveys were sent. Surveys were sent to the hiring supervisors or to the owner/manager, asking them to either complete the survey or forward it to the appropriate person. Three surveys were sent to large and medium companies, and one survey was sent to the randomly selected small companies.

Return Rate and Response Bias

A total of 116 out of 777 surveys were returned, representing a return rate of 15 percent. Although the response rate was lower than anticipated, a sufficient number of responses were received to conduct the statistical data analysis proposed for this study. Because of the small sample size, the researcher checked for response bias. In comparing the mean scores of answers between early responders and later responders, no notable differences were found. Early responders were deemed to be those who responded during the first half of the total survey time, and late responders were those who responded during the second half of the total survey time. Because of the small sample size, though, caution should be exercised in generalizing the results of this study to a larger population. A recommendation is made later in this article to verify findings of this study by replicating the study with a larger sample size and larger return rate.

Design and Implementation of the Study

A mail survey was developed using the basic workplace skills identified in the SCANS (1991) report as a framework. In addition, a section was added to ascertain the use and importance of computer skills necessary for entry-level, nonbaccalaureate-degree employees in Silicon Valley computer industry companies. The survey instrument consisted of 8 computer competency questions and 23 basic workplace skill questions derived from the eight categories identified by the SCANS report. A panel of three experts examined the instrument to provide content validity. The panel made no substantive content changes; they did suggest formatting changes to improve readability and use of the instrument. The reliability of the instrument was established by using Cronbach's alpha, which produced an alpha = .8649. A pilot study of 15 hiring supervisors from companies in the computer industry was conducted prior to the study. Not one survey was returned by the pilot group, at which point the decision was made to incorporate e-mail as well as U.S. mail as a survey method. An explanatory letter and surveys were sent by mail and e-mail to hiring supervisors or owners/managers of small, medium, and large computer industry companies in Silicon Valley, California. A follow-up e-mail was sent approximately seven days later and again seven days later to nonresponder organizations who had originally been e-mailed the survey. No follow-up was sent to nonresponder organizations that had received the survey by U.S. mail.

Data Analysis

Basic descriptive statistics (arithmetic mean, standard deviation, and frequency counts) were used to analyze demographic information, the importance of workplace and computer-literacy skills, and the desired and current skill levels in entry-level, nonbaccalaureate-degree employees of Silicon Valley computer industry companies. ANOVA, t-test, and Tukey's test for multiple comparisons were used to determine if and where statistically significant differences occurred in the survey findings.

FINDINGS

A summary of the findings is presented below for each primary research question of the study.

Research Question 1. What is the estimated availability of entry-level positions in the Silicon Valley, California, computer industry? Respondents from 94 companies reported estimated annual openings for entry-level, nonbaccalaureate-degree employees. Fourteen respondents reported openings of 101 or more; 33 reported openings of 10-100; 47 reported openings of 10 or fewer. Twenty-two respondents did not indicate annual openings on the survey. As might be expected, the organizations reporting over 100 openings were all in the large company category of 250 or more employees.

Research Question 2. What is the most reported entry-level job title in the Silicon Valley, California, computer industry? Seventy respondents reported a total of 51 different entry-level job titles. The following four job titles accounted for 46 of the total 70: administrative assistant (14), technical support (12), customer service representative (11), and receptionist (9). Nine job titles were reported three or more times and are shown in Table 1.

Table 1. Most Common Entry-Level Nonbaccalaureate Job Titles Reported by Silicon Valley Computer Industry Companies

Job Title	Number Reporting
Administrative assistant	14
Technical support	12
Customer service representative	11
Receptionist	9
Computer technician	7
Test intern/operator/technician	6
Jr. field service engineer	4
Materials handler	4
System administrator	3

Research Question 3. What is the minimum educational level for the entry-level, nonbaccalaureate-degree job described? Seventy-two respondents indicated that entry-level employees need a high school diploma; 19 indicated two years of technical school; 10 indicated a two-year associate's degree; 4 indicated one year of technical school; and 11 indicated other. The comments under "other" cited experience or a particular software application.

Research Question 4. How important are specific computer-literacy skills for entry-level, nonbaccalaureate-degree employees of the Silicon Valley, California, computer industry? Respondents were asked to indicate whether entry-level employees used a computer on the job, and if so, what percentage of those entry-level employees uses a computer. Respondents were asked also to rank on a scale of one to five the importance of eight specific computer-literacy skills. The eight computer-literacy skills were extracted from several recent studies on computer literacy (Anderson & Collis, 1993; Brock, Thomsen, & Kohl, 1992; Wiggs & Huter, 1995; Zhao, 1996), which found that knowledge of these eight components is considered as essential for high-school graduates to be computer literate.

All 116 of the respondents, 100%, indicated that entry-level employees use a computer as part of their job. Table 2 shows respondents ranked order of the importance of eight computer-literacy skills on a scale of one to five, with five being the most important.

Research Question 5. Is there a difference in perceived importance of specific computer-literacy skills for entry-level, nonbaccalaureate-degree employees of the Silicon Valley, California, computer industry according to size of company? The following null hypothesis was tested: There is no significant difference in perceived importance of specific computer-literacy skills for entry-level, nonbaccalaureate-degree

Table 2. Importance of Computer Literacy Competencies for Entry-Level Employees as Identified by Silicon Valley Computer Industry Companies

Skill	Mean	SD
Computer literacy (has basic understanding of and ability to use personal computer)	4.07	.86
Ability to use e-mail	4.07	1.01
Understands functions and ethical use of computers in society	3.55	1.03
Knows operating system	3.50	.96
Ability to use Word Wide Web/Internet	3.42	1.19
Ability to use word processing software	3.21	1.10
Ability to use spreadsheet software	2.78	1.09
Ability to use database software	2.50	1.06

employees of the Silicon Valley, California, computer industry according to size of company.

Respondents from large-, medium-, and small-size computer companies differed significantly from each other in the importance of just one computer skill area, ability to use spreadsheet software, F(2,113) = 5.6 > Fcv (3.08), $p < .05$. Post hoc multiple comparisons in SPSS were used to determine which pairs or combinations of means were not equal. A significant difference was found between small and large companies for "ability to use spreadsheet software." Large companies reported a mean score of 3.23 and small companies reported a mean score of 2.44, with a difference of .79 significant at .005, as shown in Table 3. Since this statistically significant difference was found, the hypothesis was rejected.

Table 3. Importance of Computer Literacy Competencies for Entry-Level Employees as Identified by Silicon Valley Computer Industry Companies by Size of Company

	Small		Medium		Large	
Skill	Mean	SD	Mean	SD	Mean	SD
Computer literacy (has basic understanding of and ability to use personal computer)	4.03	0.90	4.00	0.80	4.17	0.87
Ability to use e-mail	3.88	0.91	4.10	1.13	4.23	0.99
Understands functions and ethical use of computers in society	3.44	0.98	3.61	1.08	3.60	1.03
Knows operating system	3.56	0.95	3.45	0.83	3.49	1.10
Ability to use Word Wide Web/Internet	3.38	1.18	3.35	1.11	3.54	1.29
Ability to use word processing software	2.94	1.11	3.26	1.02	3.43	1.17
Ability to use spreadsheet software	2.44	1.13	2.68	0.98	3.23	1.15
Ability to use database software	2.19	1.00	2.65	1.04	2.66	1.13

Research Question 6. How important are the eight SCANS workplace competencies and skills for entry-level, nonbaccalaureate-degree workers as identified by hiring supervisors of the Silicon Valley, California, computer industry? Respondents were asked to indicate the importance of the eight SCANS workplace competencies (divided into 23 workplace skill categories) on a scale of 1 to 5. The rank order of the 23 skills is shown in Table 4.

Research Question 7. Is there a difference in perceived importance of the eight SCANS workplace competencies (divided into 23 subcategories) for entry-level, nonbaccalaureate-degree workers as identified by hiring supervisors of the Silicon Valley, California, computer industry according to size of company? The following null hypothesis was tested: There is no significant difference in importance of the eight SCANS workplace competencies (divided into 23 subcategories) for entry-level, nonbaccalaureate-degree workers as identified by the hiring supervisors of the Silicon Valley, California, computer industry depending on the size of the organization. Respondents from large, medium, and small computer companies differed significantly from each other in the importance of 8 of the 23 workplace skills at a p of <.05. (See Table 5 for mean and SD of each competency by size of company.) The following skill was more important for small- than for medium-size companies: teaches others new skills. The following skills were more important for small- than for large-size companies: listening/speaking; self-esteem/sociability; serves clients/customers; and acquires and evaluates, organizes and maintains, interprets and communicates information. The following skills were more important for medium- than for large-size companies: creative thinking, decision making/problem solving, serves clients/customers, and works with diversity. Therefore, the null hypothesis was rejected.

Table 4. Importance of SCANS Workplace Skills to Silicon Valley Computer Industry Companies

Rank	SCANS Workplace Skill	Mean	SD
1	Integrity/honesty	4.44	.63
2	Reading	4.25	.76
3	Listening/speaking	4.21	.78
4	Displays responsibility	4.12	.69
5	Serves clients/customers	4.11	.89
6	Knowing how to learn/reasoning	4.07	.76
7	Participates as member of a team	4.06	.83
8	Writing	4.00	.86
9	Works with diversity	3.93	.88
10	Uses computers to process information	3.92	.86
11	Acquires and evaluates, organizes and maintains, interprets and communicates information	3.85	.88
12	Decision making/problem solving	3.78	.80
13	Self-management	3.71	.84
14	Self-esteem/sociability	3.50	.79
15	Seeing things in the mind's eye	3.35	.91
16	Creative thinking	3.24	.91
17	Mathematics	3.13	1.00
18	Teaches others new skills	3.11	.94
19	Selects and applies technology to task	3.07	1.02
20	Identifies, organizes, plans, and allocates resources of time, money, material and facilities, and human resources	2.99	1.15
21	Exercises leadership/negotiates	2.85	.87
22	Understands systems, monitors and corrects performance, improves or designs systems	2.83	.97
23	Maintains and troubleshoots equipment	2.67	1.26

Table 5. Importance of SCANS Workplace Skills to Silicon Valley Computer Industry Companies by Size of Company

SCANS Workplace Skill	Small Mean	Small SD	Medium Mean	Medium SD	Large Mean	Large SD
Reading	4.31	0.78	4.16	0.71	4.26	0.79
Writing	4.19	0.78	3.87	0.92	3.94	0.86
Mathematics	3.06	0.88	3.03	1.03	3.30	1.10
Listening/speaking	4.47	0.62	4.19	0.94	3.96	0.78
Creative thinking	3.13	0.94	3.58	0.95	3.02	0.85
Decision making/problem solving	3.81	0.83	4.13	0.76	3.42	0.80
Seeing things in the mind's eye	3.41	1.16	3.45	0.87	3.19	0.71
Knowing how to learn/reasoning	4.09	0.82	4.16	0.66	3.94	0.82
Displays responsibility	4.19	0.74	4.13	0.64	4.04	0.71
Self-esteem/sociability	3.78	0.75	3.37	0.87	3.34	0.76
Self-management	3.84	0.88	3.61	0.82	3.66	0.81
Integrity/honesty	4.63	0.49	4.26	0.69	4.43	0.72
Identifies/organizes/plans/allocates resources of time/money/material/ facilities/human resources	2.84	1.30	2.90	1.11	3.21	1.04
Participates as member of team	4.06	0.91	4.23	0.77	3.91	0.79
Teaches others new skills	3.50	1.11	2.74	0.79	3.09	0.93
Serves clients/customers	4.38	0.79	4.29	0.81	3.68	1.07
Exercises leadership/negotiates	3.06	0.88	2.81	0.89	2.68	0.85
Works with diversity	3.97	0.90	4.19	0.80	3.62	0.92
Acquires and evaluates, organizes and maintains, interprets/communicates information	4.06	0.76	4.03	0.92	3.45	0.95
Uses computers to process information	3.75	0.84	3.94	0.88	4.08	0.85
Understands systems; monitors and corrects performance; improves or designs systems	2.75	0.80	2.90	1.08	2.85	1.02
Selects and applies technology to task	3.00	0.80	3.06	1.19	3.15	1.07
Maintains and troubleshoots equipment	2.91	1.28	2.58	1.40	2.52	1.09

Research Questions 8 and 9. What is the desired level of basic workplace skills among entry-level, nonbaccalaureate-degree employees in the eight SCANS competencies as perceived by the hiring supervisors of the Silicon Valley, California, computer industry? What is the current level of basic workplace skills among entry-level, nonbaccalaureate-degree employees in the eight SCANS competencies as perceived by the hiring supervisors of the Silicon Valley, California, computer industry? Respondents were asked to indicate the desired and the current level of workplace skills for entry-level, nonbaccalaureate-degree employees in their computer companies on a scale of 1 to 5.

In all cases, the desired level was higher than the current level of workplace skills as perceived by computer industry companies, as shown in Table 6. The largest discrepancies in means differences between desired and current skill levels, .5 or higher, were found in the following skills: knowing how to learn/reasoning, 0.77; displays responsibility, 0.71; decision making/problem solving, 0.71; listening/speaking, 0.68; acquires and evaluates, organizes and maintains, interprets/communicates information, 0.64; writing, 0.64; serves clients and/or customers, 0.62; participates as member of a team, 0.60; teaches others new skills, 0.53; and reading, 0.51.

Research Question 10. Is there a difference between desired levels and current levels of basic workplace skills for entry-level, nonbaccalaureate-degree workers as perceived by the hiring supervisors of the Silicon Valley, California, computer industry? The following null hypothesis was tested: There is no significant difference in desired levels and current levels of competency in basic workplace skills for entry-level, nonbaccalaureate-degree workers as perceived by hiring supervisors of the Silicon Valley, California, computer industry.

Statistical significance of differences in means between desired levels and current competency levels for the SCANS competencies reported by respondents was analyzed using a t-test. In all instances the desired level means was higher than the current level means, as shown in Table 7. All differences were statistically significant at the .001 level. Therefore, the null hypothesis was rejected on the basis of significant differences in every category between desired workplace skill level and current workplace skill level.

Research Question 11. Is there a difference between desired levels and current levels of basic workplace skills for entry-level, nonbaccalaureate-degree workers as perceived by the hiring supervisors of the Silicon Valley, California, computer industry according to the size of the organization? The following null hypothesis was tested: There is no significant difference between desired levels and current levels of competency in basic workplace skills for entry-level,

Table 6. Desired and Current Levels of Workplace Skills for Silicon Valley Computer Industry Companies

Skill	Desired Level Mean	Desired Level SD	Current Level Mean	Current Level SD
Reading	4.25	.63	3.74	.76
Writing	4.03	.73	3.39	.87
Mathematics	3.36	.88	3.07	.68
Listening/speaking	4.21	.64	3.53	.80
Creative thinking	3.72	.73	3.27	.70
Decision making/problem solving	4.05	.64	3.34	.81
Seeing things in the minds' eye	3.66	.73	3.23	.75
Know how to learn/reasoning	4.23	.62	3.45	.64
Displays responsibility	4.24	.67	3.53	.73
Self-esteem/sociability	3.71	.74	3.40	.69
Self-management	3.86	.76	3.37	.66
Integrity/honesty	4.40	.62	3.94	.80
Identifies/organizes/plans/allocates resources of time/ money/material/ facilities/human resources	3.51	.83	3.06	.57
Participates as member of a team	4.33	.64	3.73	.78
Teaches others new skills	3.73	.85	3.20	.79
Serves clients/customers	4.21	.79	3.59	.96
Exercises leadership/negotiates	3.33	.93	2.84	.70
Works with diversity	4.04	.71	3.56	.75
Acquires and evaluates, organizes and maintains, interprets and communicates information	3.99	.71	3.35	.80
Uses computers to process information	4.09	.68	3.71	.82
Understands systems; monitors and corrects performance; improves or designs systems	3.49	.93	3.04	.82
Selects and applies technology to task	3.60	.84	3.11	.83
Maintains and troubleshoots equipment	3.28	1.11	2.91	.97

Table 7. t-Test of Means of Desired and Current Levels of Workplace Competencies in Silicon Valley Computer Industry Companies

Skill	df	t
Reading	107	7.397*
Writing	107	8.650*
Mathematics	106	4.674*
Listening/speaking	107	9.265*
Creative thinking	107	5.605*
Decision making/problem solving	107	9.275*
Seeing things in the minds' eye	104	6.220*
Know how to learn/reasoning	107	11.325*
Displays responsibility	106	8.296*
Self-esteem/sociability	107	4.366*
Self-management	107	7.010*
Integrity/honesty	106	6.733*
Identifies/organizes/plans/allocates resources of time/ money/material/ facilities/human resources	104	6.888*
Participates as member of a team	107	8.800*
Teaches others new skills	107	6.469*
Serves clients/customers	107	7.064*
Exercises leadership/negotiates	107	6.206*
Works with diversity	107	6.144*
Acquires and evaluates, organizes and maintains, interprets and communicates information	106	7.956*
Uses computers to process information	106	5.050*
Understands systems; monitors and corrects performance; improves or designs systems	103	5.147*
Selects and applies technology to task	104	5.908*
Maintains and troubleshoots equipment	105	4.337*

*Mean difference is significant at the .001 level.

nonbaccalaureate-degree workers as perceived by hiring supervisors of the Silicon Valley, California, computer industry according to the size of company.

Data were analyzed using ANOVA to determine possible statistically significant mean difference scores between desired means and current means of workplace skills based on company size. See Tables 8, 9, and 10 for means of skills according to size of company, ANOVA data, and Tukey Post Hoc Multiple Comparison Test data. Significant differences were found in four out of 23 categories of workplace skills based on size of company. Therefore, the null hypothesis was rejected.

CONCLUSIONS

An abbreviated summary of the main conclusions reached from the analysis of the demographic data and respondent rankings of computer and workplace skills follows.

Openings and job titles. Openings existed at all companies surveyed, with the vast majority at large-size companies. Four job titles accounted for 46 of the 70 job titles reported: administrative assistant, technical support, customer service representative, and receptionist. Job seekers should definitely apply to large computer companies for one of the more common job title positions.

Educational level. The most commonly requested educational level was a high-school diploma, followed by two years of technical school. Entry-level job-seeking applicants will need a high school diploma at the minimum, with technical school the next most valuable preparation.

Table 8. Means of Desired and Current Levels of Workplace Competencies in Silicon Valley Computer Industry Companies by Size of Company

	Desired Means			Current Means		
Competency	Large	Medium	Small	Large	Medium	Small
Reading	4.06	4.19	4.48	3.74	3.45	4.03
Writing	3.91	3.97	4.19	3.39	3.19	3.58
Mathematics	3.51	3.19	3.39	3.13	2.87	3.20
Listening/speaking	4.09	4.32	4.23	3.33	3.61	3.65
Creative thinking	3.64	3.94	3.58	3.26	3.32	3.23
Decision making/problem solving	3.85	4.19	4.10	3.24	3.35	3.42
Seeing things in the mind's eye	3.47	3.83	3.68	3.13	3.17	3.39
Know how to learn/reasoning	4.00	4.29	4.39	3.33	3.52	3.52
Displays responsibility	4.15	4.26	4.32	3.57	3.63	3.39
Self-esteem/sociability	3.72	3.74	3.68	3.33	3.42	3.45
Self-management	3.91	3.87	3.81	3.28	3.42	3.42
Integrity/honesty	4.26	4.39	4.55	3.73	3.84	4.26
Identifies/organizes/plans/ allocates resources of time/ money/material/ facilities/human resources	3.44	3.48	3.61	3.11	3.13	2.94
Participates as member of a team	4.21	4.45	4.32	3.54	3.74	3.90
Teaches others new skills	3.64	3.61	3.94	3.17	3.13	3.29
Serves clients/customers	3.85	4.55	4.23	3.35	3.52	3.90
Exercises leadership/negotiates	3.32	3.19	3.48	2.85	2.87	2.81
Works with diversity	3.85	4.26	4.00	3.41	3.45	3.81
Acquires and evaluates, organizes and maintains, interprets and communicates information	3.68	4.19	4.10	3.20	3.35	3.48
Uses computers to process information	4.13	4.00	4.13	3.72	3.68	3.71
Understands systems; monitors and corrects performance; improves or designs systems	3.37	3.48	3.62	3.20	2.93	3.00
Selects and applies technology to task	3.53	3.68	3.59	3.22	3.00	3.11
Maintains and troubleshoots equipment	3.06	3.42	3.34	2.87	2.84	3.03

Computer skills. Unanimous agreement was found among companies of all sizes as to the importance of computer skills and their rank order of importance. All companies require the use of a computer by entry-level, non-baccalaureate-degree jobholders. The skills ranked in order of importance on a scale of one to five were computer literacy (4.07), ability to use e-mail (4.07), understands functions and ethical use of computers in society (3.55), knows operating system (3.50), ability to use Worldwide Web/Internet (3.42), ability to use word processing software (3.21), ability to use spreadsheet software (2.78), and ability to use database software (2.50). Entry-level employees must possess basic computer-literacy skills and the ability to use e-mail as a minimum for employment in Silicon Valley computer-industry companies, with other computer skills important to a lesser degree.

Top-ranked workplace skills. Integrity/honesty is the most desired skill by all companies. The nine top-ranked workplace skills for all companies, with means ranging from 3.93 to 4.44, were as follows: (a)

Table 9. ANOVA for Differences in Mean Scores of Desired and Current Levels of Workplace Skills Based upon Size of Company

Skill Category		Sum of Squares	*df*	Mean Square	F	Sig.
Reading	Between					
	groups	3.241	2	1.621	3.72	.027
	Within groups	45.722	105	.435	2	
Serves clients/customers	Between	8.638	105	4.319	6.02	.003
	groups	75.242	107	.717	7	
	Within groups	83.880				
Works with diversity	Between	5.873	2	2.936	4.73	.011
	groups	65.090	105	.620	7	
	Within groups	70.963	107			
Understands systems;	Between	3.931	2	1.966	3.37	.038
monitors and corrects	groups	58.905	101	.583	0	
performance; improves or	Within groups	62.837	103			
designs systems						

*Mean difference is significant at the .05 level.

integrity/honesty, (b) reading, (c) listening/speaking, (d) displays responsibility, (e) serves clients/customers, (f) knowing how to learn/reasoning, (g) participates as a member of a team, (h) writing, and (i) works with diversity. Of the top nine skills and competencies, none were technical in nature. The most desirable skills and competencies, for the most part, require an employee's ability to interact and relate well with others in the workplace.

Skills gap. Unanimous agreement exists among all size of companies that there is a skills gap between desired and current skills in 100% of the 23 SCANS workplace skills. The largest gaps, with mean differences of .5 or higher, existed in the following skills: knowing how to learn/reasoning (ranked 6 in importance), 0.77; displays responsibility (ranked 4), 0.71; decision making/problem solving (ranked 12), 0.71; listening/speaking (ranked 3), 0.68; acquires and evaluates, organizes and maintains, interprets and communicates information (ranked 11) 0.64; writing (ranked 8) 0.64; customer service (ranked 5), 0.62; teamwork (ranked 7), 0.60; teaches others new skills (ranked 18) 0.53; and reading (ranked 1), 0.51. Silicon Valley computer industry employers perceived a large gap in seven of the eight skills ranked most important by their industry: reading, listening/speaking, responsibility; customer service, knowing how to learn/reasoning, teamwork, and writing.

RECOMMENDATIONS

The following recommendations are based on the findings of this study. It should be noted that in reading these recommendations, the underlying premise is that education is the link between students and industry. For these recommendations to be implemented, educators need to communicate the needs of industry; and students need to prepare themselves by identifying their current skills and obtaining more education or training to meet industry expectations. Consequences of this interaction between students, educators, and industry will produce better prepared entry-level, nonbaccalaureate-degree employees entering the workplace possessing the skills desired by Silicon Valley computer industry companies.

1. Given that the vast majority of openings for entry-level, nonbaccalaureate-degree employees in Silicon Valley, California, are at large-size companies, it is recommended that prospective employees be knowledgeable about the history and hiring practices of these large companies, obtain the desired skills, and apply there for positions.
2. Given that certain job titles for entry-level, nonbaccalaureate-degree employees were reported multiple times, it is recommended that prospective nonbaccalaureate-degree employees who wish to work in the computer industry apply for positions as administrative assistant, technical support, customer service

Table 10. Tukey Post Hoc Multiple Comparison Test for Means of Differences between Current and Desired Workplace Skills Based upon Size of Company

Skill	(I) Size	(J) Size	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Reading	Medium	Small	2.90	.168	.198	-.108	.689
		Large	.416*	.153	.021	5.130E-02	.780
	Large	Small	-.126	.153	.692	-.490	.239
		Medium	-.416*	.153	.021	-.780	-5.130E-02
Serves clients/ customers	Small	Medium	-.710*	.215	.004	-1.221	-.198
		Large	-.177	.197	.640	-.645	.290
	Medium	Small	.710*	.215	.004	.198	1.221
		Large	.532*	.197	.022	6.460E-02	1.000
	Large	Small	.177	.197	.640	-.290	.645
		Medium	-.532*	.197	.022	-1.000	-6.460E-02
Works with diversity	Small	Medium	-.613*	.200	.008	-1.088	-.137
		Large	-.263	.183	.326	-.698	.172
	Medium	Small	.613*	.200	.008	.137	1.088
		Large	.350	.183	.140	-8.504E-02	.785
Understands systems; monitors and corrects performance; improves or designs systems	Small	Medium	.121	.199	.817	-.352	.594
		Large	.443*	.182	.044	1.032E-02	.876
	Large	Small	-.443*	.182	.044	-.876	-1.032E-02
		Medium	-.322	.180	.178	-.750	.106

*Mean difference is significant at the .05 level.

representative, receptionist, and/or other similar emerging job titles.

3. Given that a high school diploma and some technical training will qualify entry-level job-seekers for employment in Silicon Valley computer industry companies, it is recommended that students preparing for employment not only complete high school but also attain technical training through career-technical courses at high school, community college, or other private-training institutions available in the community.
4. Given the expectation that all entry-level nonbaccalaureate-degree employees are expected to use a computer on the job, it is recommended that all students seeking employment in the Silicon Valley computer industry obtain optimum training on computer basics, use of e-mail and internet and, if possible, specific word processing, spreadsheet, and database software programs currently used by local companies. Teachers and counselors in secondary and postsecondary schools should ensure that their students are aware of the need for computer skills in all entry-level, nonbaccalaureate-degree positions in Silicon Valley computer companies.
5. Given that size of company does not affect the perceived importance of essential computer skills for entry-level positions, job-seeking students should attach a high priority to computer training regardless of size of company where they plan to seek employment.
6. Given that integrity/honesty is the most desired skill by all size companies in the computer industry, job-seeking students should be aware and prepared to discuss the implications of this highly desired trait during an interview with potential employers. Teachers and counselors should be sure that students are mindful of the critical need for this trait. Teachers may want to include the topic of ethics in the workplace, particularly as it relates to the computer industry, in their instruction. As the remaining SCANS skills are perceived as important to the computer industry in Silicon Valley, California, in varying degrees, the educational community should review its current curricula to ascertain if adequate instructional resources are focused on teaching and reinforcing those desired skills, especially the basic and interpersonal skills of reading, listening/speaking, responsibility, customer service, knowing how to learn/reasoning, teamwork, writing, and working with diversity.

   Education-industry partnerships should be promoted to initiate and sustain a dialogue between education and business. Educators should be cognizant of the most desired skills the computer industry is seeking, as identified in this study, as they plan curricula to prepare students for future employment.

   Student internships should be investigated as a method for students to observe the necessity of those skills valued by the computer industry.

   Both academic and career-technical teachers should visit local industries where their students may be employed or participate in teacher internships for local teachers at Silicon Valley high tech companies such as IISME (Industry Initiatives for Science and Math Education) currently facilitates.
7. Given that certain SCANS skills are more important to small- and medium-size computer companies, students seeking employment at those companies should be aware of and prepared to demonstrate and communicate their competency in these areas: listening/speaking; self-esteem/sociability; teaches others new skills; serves clients/customers; and acquires and evaluates, organizes and maintains, interprets and communicates information.
8. Given that a significant difference exists between desired and current levels in all 23 SCANS subcategories of workplace skills, local educational institutions that prepare students for the computer industry need to examine the categories with the largest perceived gaps and determine what curricula their schools should implement to narrow those gaps. Those skill areas with the largest gaps include knowing how to learn/reasoning (ranked 6 in importance); displays responsibility (ranked 4); decision making/problem solving (ranked 12); listening/speaking (ranked 3); acquires and evaluates, organizes and maintains, interprets/communicates information (ranked 11); writing (ranked 8); serves clients and/or customers (ranked 5); participates as member of a team (ranked 7); teaches others new skills (ranked 18); and reading (ranked 2).

RECOMMENDATIONS FOR FURTHER STUDY

The following recommendations are made based on the findings and conclusions of the study:

1. Further study should be undertaken with a larger sample size of Silicon Valley computer industry companies to verify current findings and implications identified by this study. Attempts should be made to gain a higher return rate so that findings are validated and generalizable.
2. This study addressed the needs of just one occupational sector in a specific geographical area, Silicon Valley, California. Although the computer industry represents a large and influential employer base in this community, it is not the only employer. Additional studies should be undertaken to determine if computer and SCANS workplace skills are equally important to local employers in other industrial sectors in Santa Clara County and elsewhere.

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Spreadsheet Competencies Needed for Entry-Level Managerial Positions in Accounting and Business Information Systems

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ABSTRACT

The purpose of this study was to identify a clear set of spreadsheet competencies needed by business graduates for entry-level managerial positions in accounting and business/information systems. The study was conducted using a modified Delphi procedure with three panels of spreadsheet experts. The panels included accounting and business/information systems managers and four-year postsecondary business educators who committed to the three-round Delphi process to reach consensus about important spreadsheet competencies. The primary data gathering instrument was a spreadsheet competency survey adapted from competencies identified in previous research as well as those identified in Office Proficiency Assessment and Certification Systems® (OPAC) and Microsoft® Office User Specialists (MOUS) Certification objectives.

Study results include 65 spreadsheet competencies agreed upon by all three panels as an important skill set needed by a postsecondary business graduate. The listing provides a clear set of spreadsheet competencies that should be addressed in curriculum development for all spreadsheet courses or in the spreadsheet portion of a computer applications course. Recommendations include indicators for teaching strategies for spreadsheet application courses and the alignment and mapping of the competencies to appropriate curriculum standards and to assessments through which students will demonstrate their competence.

The current focus on accountability by the American educational system parallels the push for high performance in the workplace that has been the driving force for change in companies across the nation. Along with the focus on quality in both arenas, many (Berryman, 1987; Daggett, 1992; Packer & Pines, 1996; Resnick & Wirt, 1996; Zemsky & Iannozzi, 1995) feel that the improvement needed is a more effective relationship between education and the workplace. A key component of that relationship is a shared understanding of standards that students should know and be able to do that will lead to more effective school-to-work transition. According to Sormunen, Smith, and Lane (1996, p. 12) "a necessary step in developing solutions to the problem of school-to-work transition is defining and measuring the skills and competencies that are essential."

Successful participation in work and society depends on the capacities involved in managing technological systems, processes, and equipment. The use of technology requires skills in interpreting information that go well beyond what used to be required of all but the highest level workers and managers (Resnick and Wirt, 1996). All productive citizens need to be prepared for the skilled use of information technology in both personal and professional capacities.

McCune (1999) indicated that there is a critical need for "tech-savy" employees. Such an employee has "productivity" knowledge or the ability to use everyday technology tools such as corporate e-mail systems, word processing programs, spreadsheet applications, desktop publishing software, computerized presentation tools, or database programs.

If spreadsheets are a necessary technology tool for all professionals, including accounting and business/information systems managers, then there is a need for shared definitions of spreadsheet competencies required of business graduates seeking entry-level managerial positions. Two-way communication about how the knowledge and skills that make up these competencies are demonstrated in business world settings is critical to a shared understanding on the part of educators and business/industry employers.

Prior research related to the use of spreadsheets and the computer end-user environment has been more focused on the identification of specific software application programs in use in business. The purpose of this study was to identify a clear set of spreadsheet competencies needed for entry-level managerial positions in accounting and business/information systems.

REVIEW OF RELATED LITERATURE

Insight, understanding, and guidance in the formulation of the research problem and design were derived from the review of literature. Studies by Hannah (1994/1995), Lomo-David (1989), Rogers and Arn (1993), Womble (1993), Zhao (1996), and Zhao, Ray, Dye, and Davis (1998) were reviewed because of the similarity of purpose in identifying spreadsheet competencies or computer end-user skills. Findings from the studies show spreadsheet knowledge as important, yet do not give a further breakdown that would provide detailed competency information. With the exception of Rogers and Arn

(1993), none have identified specific competencies in terms of what a person should know how to do. Overall, the emphasis has been on differences in perceptions about the spreadsheet application as a single item.

The expanded review of literature also included studies related to the wider use of information technology (Anderson, 1992; Blili, Raymond, & Rivard, 1996; Lee, Trauth, & Farwell, 1993; Yang, 1996), the use of the electronic spreadsheet as an essential skill (Galbreath, Booker, and Adams, 1998; Prawitt, Romney, and Zarowin, 1997), and computer-user issues (Benham, DeLaney, and Luzi, 1993). An increasing issue is the need for proper use of the tools for productive end-user computing that provides further support for the importance of examining spreadsheet competencies.

Finally, business and information systems curriculum models were reviewed including *National Standards for Business Education: What America's Students Should Know and Be Able to Do in Business*, IS' 97, and the OEIS Model Curriculum. In each of the documents, the expected capabilities in relation to the use of software application programs have been addressed in broad terms, but specific detail about spreadsheet competencies was not delineated.

METHODOLOGY OF THE STUDY

The identification of a clear set of spreadsheet competencies can provide a sound basis for curriculum development and for the implementation of instruction that will ensure a more effective transition to the workplace.

Population and Sample

The population for this Delphi study included accounting and business/ information systems managers and four-year postsecondary business educators. The appropriate panel population for each cohort of this study was made up of individuals self-identified for their spreadsheet expertise. Study criteria qualified expertise as articles published or books authored, spreadsheet presentations given, spreadsheet solutions or projects contributed in the workplace. The primary contact for managers and educators was through professional associations. Secondary contact in order to obtain a full complement of Delphi panel members in all three panels was through a purposeful or criterion sampling process of referrals from managers serving in advisory capacity for secondary and postsecondary business/information systems programs and in the field at a wide range of companies. Managers and postsecondary business educators, making up three expert panels, completed a three-round modified Delphi procedure with a survey of spreadsheet competency items.

The use of the Delphi process with requirements to qualify the expertise of panel members, to establish a panel consensus through a three-round process, and to answer study research questions resulted in findings that will be presented in two parts.

FINDINGS

The findings from this Delphi study of spreadsheet competencies include Delphi panel results and the analysis of data to address study research questions.

Delphi Panel Results

The distribution of an initial survey of 77 spreadsheet competency items marked the beginning of the Delphi process to reach agreement about the important competencies needed by a business graduate seeking an entry-level managerial position in accounting and business/information systems. The 77-item survey was adapted from competencies in research by Haff (1994), Otto (as cited in Rogers & Arn, 1993), and Womble (1993), as well as those identified in Office Proficiency Assessment and Certification System® (OPAC) and Microsoft® Office User Specialist (MOUS) Certification objectives. Each of the 49 panel members in three separate panels received instructions to rate each of the competencies according to its importance as an expected proficiency and to suggest changes or make additions to the list of competency items.

Analysis of Research Questions

A total of 49 spreadsheet experts representing postsecondary business educators and accounting and business/information systems managers participated as panel members in three separate panels to carry out a modified Delphi procedure to reach consensus on important spreadsheet competencies. Panel response to the spreadsheet competency survey was analyzed to address four research questions.

What are the important spreadsheet competencies? The major research question for this study was, "What are the spreadsheet competencies needed for entry-level managerial positions in accounting and business/information systems as perceived by managers and postsecondary educators?"

Important spreadsheet competencies indicated through survey response reiterated during the three-round Delphi procedure were identified and a mean rating of the level of importance and standard deviation was calculated for each one. At the conclusion of the Delphi process with each panel operating independently, panel members across all three panels agreed on a set of 65 competencies, as shown in Table 1.

The comparison of ratings of the competencies by all three panels is an important finding for this study. As shown by the shaded areas, the competencies that were rated as the top ten by all three panels are among the first 19 competencies listed. In addition, the competencies rated at 4.5 and above or extremely important by all three panels are within the first 29 items. Two-thirds of the items received a mean rating of 3.5 or higher indicating overall agreement about the importance of the competencies listed. A further indication of agreement on the importance of the majority of the competencies is that only 9 of the items received a mean rating lower than 2.5 from panel members across all three panels.

Table 1. Ratings of Important Spreadsheet Competencies Common Across Three Delphi Panels

	Business Educators			Accounting Managers			Business/Information Systems Managers		
Competency	**Rank**	**Mean**	**SD**	**Rank**	**Mean**	**SD**	**Rank**	**Mean**	**SD**
Copy data w absolute/relative cell ref.	1	5.00	0.00	23	4.05	0.97	29	4.00	0.67
Create formulas for spreadsheets	2	4.95	0.23	15	4.63	0.83	2	5.00	0.00
Print a worksheet	3	4.95	0.23	1	4.95	0.23	4	5.00	0.00
Print an area of a spreadsheet	4	4.95	0.23	6	4.84	0.37	10	4.90	0.32
Change a cell value	5	4.89	0.32	12	4.68	0.58	6	4.90	0.32
Save to a specific folder/directory	6	4.89	0.32	7	4.84	0.50	11	4.90	0.32
Sum a row or column	7	4.89	0.32	3	4.89	0.46	5	5.00	0.00
Create a new spreadsheet	8	4.89	0.46	8	4.79	0.54	13	4.80	0.42
Undo previous actions	9	4.89	0.46	13	4.68	0.58	12	4.90	0.32
Create functions for spreadsheets	10	4.84	0.37	32	3.68	0.89	26	4.20	0.92
Enter data into existing spreadsheet	11	4.84	0.37	2	4.89	0.46	3	5.00	0.00
Add formatting to a cell	12	4.84	0.50	4	4.84	0.37	1	5.00	0.00
Create a chart	13	4.79	0.42	26	3.79	0.71	17	4.70	0.48
Cut/paste, copy/move cell contents	14	4.79	0.42	9	4.79	0.54	7	4.90	0.32
Change page orientation	15	4.79	0.54	28	3.74	0.87	20	4.60	0.52
Delete a row or column	16	4.79	0.54	11	4.74	0.65	14	4.80	0.42
Format cell values	17	4.79	0.54	10	4.74	0.56	15	4.80	0.42
Format cells	18	4.79	0.54	5	4.84	0.37	8	4.90	0.32
Insert a row or column	19	4.74	0.56	16	4.58	0.77	9	4.90	0.32
Select and use functions from list	20	4.58	0.51	24	4.00	1.11	27	4.10	0.57
Clear contents of a cell	21	4.58	0.84	14	4.68	0.75	18	4.70	0.67
Change chart type	22	4.42	0.69	37	3.42	0.90	38	3.70	0.48
Sort values in a worksheet	23	4.37	0.76	17	4.37	0.60	19	4.70	0.67
Use database functions	24	4.32	0.58	19	4.26	0.65	23	4.40	0.70
Change chart layout	25	4.32	0.75	35	3.53	0.90	37	3.70	0.48
Change fonts and font size	26	4.26	0.73	21	4.11	0.88	21	4.50	0.97
Insert a date	27	4.26	0.99	18	4.37	0.76	24	4.40	0.84
Clear spreadsheet	28	4.21	0.79	22	4.11	0.88	30	4.00	0.94
Add column headings to printout	29	4.16	0.69	20	4.21	0.79	16	4.70	0.48
Create internal/external file links	30	4.11	0.66	41	3.16	1.07	59	2.80	0.79
Lock contents/cell protection	31	4.11	0.74	31	3.68	0.75	46	3.50	0.85
Create a chart using external data	32	4.00	0.58	38	3.32	0.95	40	3.70	0.82
Enter repeated labels	33	4.00	0.58	39	3.21	0.92	32	3.90	0.74
Adjust row height	34	4.00	0.82	33	3.63	1.01	28	4.10	0.74
Change order of worksheets	35	4.00	0.82	46	3.11	0.94	41	3.70	0.95
Find and replace values in a cell	36	4.00	0.94	29	3.74	0.99	22	4.40	0.52
Format a chart legend	37	3.95	0.62	30	3.68	0.75	33	3.90	0.74
Merge cells	38	3.89	0.66	52	2.89	0.81	45	3.50	0.71
Add a custom header/footer	39	3.84	0.76	25	3.84	0.60	25	4.20	0.63
Center worksheet horizontally/vertically	40	3.84	0.76	36	3.53	0.96	34	3.80	0.42
Display graphics	41	3.74	0.73	53	2.68	0.58	36	3.80	1.03
Change numeric values to text	42	3.68	0.75	42	3.11	0.57	31	3.90	0.74
Insert editing comments into a cell	43	3.68	0.82	40	3.21	0.98	62	2.80	1.14
Set up automatic/background recalculation	44	3.68	0.82	62	2.37	1.01	50	3.20	1.14
Insert an object or picture	45	3.63	0.76	61	2.42	0.84	61	2.80	1.03
Hide gridlines	46	3.63	1.01	47	3.05	1.03	35	3.80	0.42
Create macros for spreadsheet	47	3.58	0.77	45	3.11	0.81	43	3.60	0.70
Hide contents of a cell	48	3.58	0.84	27	3.74	0.73	49	3.20	0.63
Place a password for file protection	49	3.58	0.90	48	3.00	0.88	51	3.10	1.10
Set up validation rules	50	3.53	0.70	55	2.68	0.82	56	3.00	0.94
Import delimited files	51	3.47	0.77	34	3.58	1.02	42	3.70	0.95
Create a pivot table	52	3.47	0.84	56	2.58	0.96	60	2.80	1.03
Insert an internet hyperlink	53	3.47	0.84	58	2.53	0.90	52	3.00	0.67
Create conditional formatting	54	3.37	0.83	60	2.47	0.90	58	2.80	0.79
Add a text box	55	3.32	0.58	43	3.11	0.81	44	3.50	0.53
Use auto features	56	3.32	0.75	50	2.95	0.78	48	3.30	0.82
Use auditing tools	57	3.26	0.73	51	2.89	0.74	54	3.00	0.67
Change color of cell or text within	58	3.26	0.87	44	3.11	0.81	39	3.70	0.67
Use go to command	59	3.16	0.83	49	3.00	0.88	47	3.40	0.97
Add a trend line to a chart	60	3.11	0.46	54	2.68	0.82	55	3.00	0.82
Add an organizational chart	61	3.05	0.85	65	1.89	0.74	64	2.00	0.67
Rotate text in cells	62	2.79	0.79	63	2.05	0.78	53	3.00	0.67
Pull pivot table data for another sheet	63	2.79	0.85	57	2.58	0.96	57	2.90	0.88
Add rectangles, circles, shapes	64	2.68	0.75	64	2.00	0.58	65	2.00	0.94
Add an indent within a cell	65	2.47	0.77	59	2.53	0.96	63	2.60	0.52

Managers' and Educators' Perceptions About Spreadsheet Competencies. The remaining research questions investigated the relationships between managers' and postsecondary business educators' perceptions about spreadsheet competencies needed for entry-level managerial positions in the fields of accounting and business/information systems. Research questions 2, 3, 4 and their corresponding hypotheses follow.

2. Is there a relationship between managers' perceptions about spreadsheet competencies needed for entry-level managerial positions in accounting and business/information systems?
3. Is there a relationship between accounting managers' and four-year postsecondary business educators' perceptions about spreadsheet competencies needed for entry-level managerial positions?
4. Is there a relationship between business/information systems managers' and four-year postsecondary business educators' perceptions about spreadsheet competencies needed for entry-level managerial positions?

The mean ratings of importance for each spreadsheet competency provided the basis to calculate the Pearson product-moment correlation coefficient (known as the Pearson r) for each pairing of the three combinations of the Delphi panel respondents for this study. A Pearson r of .93 confirmed a highly correlated relationship between the ratings given to spreadsheet competency items by accounting and business/information systems managers. Calculations of a Pearson r of .86 and of .87 went further to confirm fairly high relationships between ratings by accounting managers and business/information systems managers each paired with ratings by postsecondary business educators. The correlations in each case were tested at the $p = .05$ level and found to be significant. The levels of confidence in each of the three cases were assured at the .001 level and the null hypotheses that there were no relationships between the panels were each rejected.

As cited in Gall, Borg, and Gall (1996), the relationship between the panel pairs was also examined by squaring the Pearson r to yield a statistic r^2. A common variance of .87, .74, and .75 was found for the pairing of the two manager panels and then for each manager panel paired with the postsecondary business educator panel. The ratings of each combination of the three groups varied in a systematic way to show 87%, 74%, and 75% of their variance in common across 75, 76, and 73 competencies respectively.

CONCLUSIONS

Conclusions based on the study findings provide direction for the teaching of spreadsheet applications and insight into improved understanding between business and education communities concerning needed competencies.

Direction for Teaching Spreadsheet Applications

1. The purpose of the study was realized at the end of the Delphi process with a final listing of 65 spreadsheet competencies that were rated as important to extremely important by business educators and managers in accounting and business/information systems. This listing provides a clear set of spreadsheet competencies that have been agreed upon by accounting and business/information systems managers and postsecondary business educator panels as being needed by a business graduate seeking an entry-level managerial position.
2. Overall, postsecondary business educators and managers in accounting and business/information systems agree on spreadsheet competencies that are extremely important. The competencies rated as the top 10 by accounting and business/information systems managers are among the 19 competencies receiving the highest ratings from business educators. (See Table 1).
3. The spreadsheet competency data has immediate practical significance. The functional list of the 65 competencies in alphabetical order grouped by an action verb provides a useful organizer for curriculum development (See Table 1).
4. Postsecondary business educators tended to give higher ratings to more of the competencies. There were 36 competencies rated at 4.0 and above, very important to extremely important, by the business educators compared to 24 items for the accounting managers and 30 items for the business/information systems managers.

Improved Understanding of Spreadsheet Applications in Business Settings

1. Accounting managers' ratings of items reflected a more targeted use of the spreadsheet. The 11 competencies rated highest in importance (4.74 and above) is a basic skill set for spreadsheet applications in accounting (see Table 1).
2. The business/information systems managers were unique in their total agreement about the top five competencies that were all rated at 5.0, extremely important. The five competencies that were unanimously agreed upon by this group of managers also included a basic skill set (see Table 1).

RECOMMENDATIONS

Based on the study findings and conclusions drawn concerning important spreadsheet competencies, recommendations for curriculum development, for improved communication between education and workplace settings, and for further research are presented.

Recommendations for Curriculum Development

1. There are 65 spreadsheet competencies that should be addressed in curriculum development for all spreadsheet courses or in the spreadsheet portion of a computer applications course. The list of 65 agreed-upon competencies can be used as a checklist for what someone should know and be able to do with a spreadsheet application program. The competencies would be

aligned to appropriate curriculum standards and mapped to assessments through which a student will demonstrate the appropriate knowledge and skill.

2. There are 65 important spreadsheet competencies that have been agreed upon by spreadsheet experts in accounting and business/information systems. With the further identification of 10 to 19 very important competencies, there is now a listing for a critical skill set that can be applied to curriculum development for the teaching of spreadsheet applications in all computer applications courses where the spreadsheet application is addressed. (Refer to Table 1)
3. The spreadsheet competencies identified as important by accounting and business/information systems managers and not by business educators need to be addressed where appropriate in the postsecondary business curriculum. Business educators need to examine curriculum content both within general computer applications courses and across a sequence of specialized courses to make sure specific spreadsheet competencies that are more important in preparation for one field versus another are addressed.

Recommendations for Continuing Communication

1. Business educators need to continue to look for ways to survey or shadow appropriate business representatives in the workplace to provide information to identify the types of business problems or purposes for which spreadsheet solutions are used.
2. Educators and managers in accounting and business/information systems need to recognize that competency due to longevity in using the computer is a combination of both formal and informal lifelong learning experiences acquired both in the classroom and on the job. Therefore, it is critical that educators establish business advisory groups so that there is regular communication about the competencies needed in the use of computer software application programs and the hardware or equipment configurations on which they are being used.

Recommendations for Further Research

1. Business educators need to examine specific workplace solutions and work-based projects developed by business managers as the basis for the development of a study survey for further research of competencies in the use of spreadsheets and other computer application programs. The survey developed could be aligned to actual workplace performance products.
2. This study should be replicated for different fields of business such as marketing and international business, for different computer applications such as database and desktop publishing, and at different educational levels such as secondary and postsecondary career technical programs.

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2001 Business Education Research Studies

The following compilation of research studies in business education completed in 2001 is published as a convenient reference by the National Business Education Association (NBEA). The information included in this listing was collected from National Association for Business Teacher Education (NABTE) member colleges and universities. NBEA requested that all NABTE representatives report on research studies leading toward a graduate degree in business education. The listing of studies is alphabetical, and there are no major classification categories for specific groups of studies. Instead, studies can be indexed according to the key words listed at the end of each entry.

AL DUGHAISHEM, MOHAMMED. "Developing a Model Program for Preparing Saudi Business Teachers." University of Minnesota, Ph.D. 2001. (Curriculum, Teacher Education)

ANDERSON, JOHN EMIL. "Training Needs Assessment, Evaluation, Success, and Organizational Strategy and Effectiveness: An Exploration of the Relationships." Utah State University, Ph.D. 2001. (Training Needs, Assessment)

BASILE, ANTHONY. "Achievement of Accounting Students Relative to Individual Learning Styles and Locus of Control: An Experiment Involving Internet-Based Learning." New York University, Ph.D. 2001. (Accounting, Learning Styles, Locus of Control, Experimental Design)

BRAMLET, PAM. "Tech Prep/School-to-Work Content as Reflected in Secondary School English Textbooks: A Content Analysis." Southern Illinois University Carbondale, Ph.D. 2001. (Tech Prep, School-to-Work)

BUSCH, ANDREA HENDON. "Secondary Vocational & Applied Technology Education and Its Impact on the Transition from Education to Employment." University of Houston, Ed.D. 2001. (School-to-Career, School-to-Work, High School Accountability, Post-High School Follow Up)

CALDWELL, WILLIAM. "The Nature of Small Business Training Practices in Southern Illinois." Southern Illinois University Carbondale, Ph.D. 2001. (Small Business, Workforce Training)

CHILDERS, MICHAEL. "Total Quality Management and Performance Appraisals—Recognizing the Dichotomy." Southern Illinois University Carbondale, M.S. 2001. (Quality Management, Performance Appraisals)

CLARK, PENNY JO. "The Curriculum Internationalization Process in Banking and Finance School-To-Work Programs: A Qualitative Study." The University of Georgia, Ph.D. 2001. (Curriculum Internationalization, Global Education, Comparative Research)

CRANE, ERIC. "What Is It Like for Moroccans To Learn How To Use Information Technology." University of Minnesota, Ph.D. 2001. (Technology, Learning)

DARBY, MICHELLE M. "The Computer Skills Expected of High School Graduates Applying for Positions by Employers in Springfield, Missouri." Southwest Missouri State University, M.S. 2001. (Computer Skills, Workplace Skills)

DUNCAN, JOHN. "Factors Affecting the Use of Computers by Students in the Classroom." Southern Illinois University Carbondale, M.S. 2001. (Computers)

FORTE, ALMERINDA. "Business Ethics: A Comparative Study of the Moral Reasoning Ability of Selected Business Managers." New York University, Ph.D. 2001. (Management, Ethics, Survey Design)

GANDY, JANET M. "Perceptions of State Supervisors on the Future of Vocational Business Education." Arizona State University, Ed.D. 2001. (State Supervisors, Future, Vocational Business Education)

GOOD, FRANCES. "The Impact of Gender on Types of Verbal Interactions in Corporate Training Sessions." University of Minnesota, Ed.D. 2001. (Training, Gender, Trainer/Trainee Interaction)

HENDERSON, DONNA KAY. "Basic Workplace and Computer Literacy Skills for Entry-Level, Nonbaccalaureate-Degree Employees of the Silicon Valley Computer Industry." Utah State University, Ph.D. 2001. (Workplace Skills, Computer Literacy Skills)

IMBODEN, MICHAEL. "Computer Literacy Requirements for Higher Education Students." Southern Illinois University Carbondale, M.S. 2001. (Computers, Higher Education)

JIMENO, CHERI A. "Integrating Cultural Concepts that Influence International Business into the Secondary Business Education Curriculum." Utah State University, Ph.D. 2001. (International Business, International Culture)

KANTER, JILL. "FINCA International: A Case Study in the Standardization of Operations for the Globalizing Organization." University of Minnesota, M.A. 2001. (Global HRD, Case Study)

KAYE, ANGELA. "Implementation of Computer Technology and Training in Municipal Governments with Populations from 10,000 to 100,000." Southern Illinois University Carbondale, M.S. 2001. (Computer Technology, Government Training)

KING, ANGELICA. "Improving Information Technology Projects through HRD." University of Minnesota, M.A. 2001. (Information Technology, HRD)

KUO, MIN-HSUN CHRISTINE. "The History of Human Resource Development in Taiwan, 1950s-1990s." University of Minnesota, Ph.D. 2001. (History, Global HRD)

LEACH, LYNN. "Selected Contextual Teaching and Learning Approaches in Computer Assisted Instruction." Southern Illinois University Carbondale, M.S. 2001. (Computer Assisted Instruction)

LEE, CHIEN-CHIH JAMES. "Perceptions of Instructors and Students Toward Interactive Video Distance Education Classroom Design in Higher Education." Mississippi State University, DET. 2001. (Interactive Video Distance, Classroom Design)

LUBKE, JEAN E. "Employee Development Needs Assessment/ Analysis Processes: A Practical Inquiry." University of Minnesota, Ph.D. 2001. (Needs Assessment, Training)

MADSEN, SUSAN. "The Effects of Home-Based Teleworking on Work and Family Conflict." University of Minnesota, Ph.D. 2001. (Teleworking, Work/Family Balance)

MCCULLY, ANGELA. "A Descriptive Study of Vocational Education in the Summersville Missouri Area: Preparing Students To Meet Employer Workplace Skills and Behavior Expectations." Southwest Missouri State University, M.S. 2001. (SCANS Skills, Workplace Skills)

MUSUMECI, JAMES S. "The Reported Experience of a Hospice Interdisciplinary Team." New York University, Ph.D. 2001. (Teams, Workplace Training, Qualitative Design)

MYXTER, LYRAE. "Cultural Considerations for Effective Global Training." University of Minnesota, M.A. 2001. (Global HRD, Culture)

NAWROCKI, SELENA CELESTE. "Interior Designers' Computer Applications in Professional Practice: Implications for Interior Design Education." Mississippi State University, DET. 2001. (Interior Designers' Computer Applications)

NELSON, SHANNON. "Computer Curriculum for Grades 5 and 6 in Missouri Schools." Southwest Missouri State University, M.S. 2001. (Middle School Curriculum, Computer Curriculum)

NJUGUNA, WANJIKU. "Factors Affecting Help-Seeking Behavior in Organizations." Southern Illinois University Carbondale, M.S. 2001. (Behavior, Organizations)

PENNINO, CLARE. "The Relationship Between Managerial Decision Style, Principled Reasoning, and Selected Variables in Business Organizations." New York University, Ph.D. 2001. (Management, Decision Style, Ethics, Survey Design)

REPNOW, JAN. "Survey To Determine Interest in a Master's Degree in Career and Technical Education." University of North Dakota, M.S. 2001. (Curriculum Development)

RITTER, MELISSA. "The Role of Secondary School Technology Coordinators." Southern Illinois University Carbondale, M.S. 2001. (Secondary School Technology)

ROBERTSON, NANCY E. "A Study of Intervention Programs for Adolescent Girls in Missouri Public Schools." Southwest Missouri State University, M.S. 2001. (Intervention Programs, Adolescent Self-Esteem)

ROMAN, VIVIAN. "Emotional Intelligence: A Necessary Job Requirement." Southern Illinois University Carbondale, M.S. 2001. (Emotional Intelligence)

ROSENOW, TRACEY. "Utilizing Employee Retention Strategies in Retaining Valuable Workplace Employees." Southern Illinois University Carbondale, M.S. 2001. (Employee Retention)

SCOBBY, FRANK. "Barriers To Transfer of Training to the Workplace." Southern Illinois University Carbondale, M.S. 2001. (Workplace Training)

SCOTT, TEMUJIN. "A Survey To Profile the Current Status and Activities of the FBLA Chapters in the State of New Jersey." Montclair State University, M.A. 2001. (FBLA, Student Organizations)

SMITH, JEANNINE KIRKPATRICK. "A Study To Identify Barriers Encountered by Non-Traditional Female Students in a Technology-Related Field." Mississippi State University, DPT. 2001. (Barrier, Non-Traditional Female)

TAGHAVI, SEYED EBRAHIM. "Evaluation of College Students' Attitudes Toward Computers Before and After Taking a Computer Literacy Course." Mississippi State University, DPT. 2001. (Attitudes, Computer Literacy)

TAYLOR, PRINCE. "Promoting Cultural Diversity and Multiculturalism in the Workplace." Southern Illinois University Carbondale, M.S. 2001. (Cultural Diversity, Multiculturalism)

TEICH, IRA. "A Marketing Perspective of Donation Attitudes and Intentions: An Analysis of Selected Factors Which May Impact Alumni Contributions." New York University, Ph.D. 2001. (Marketing, Donation Attitudes, Theory of Reasoned Action, Survey Design)

WOODS, JUDY SHELTON. "An Investigation of the Relationships Among Emotional Intelligence Levels, Holland's Academic Environments, and Community College Students' Internet Use." Mississippi State University, DPT. 2001. (Emotional Intelligence, Internet Use)

YAMNIL, SIRIPORN. "Factors Affecting Transfer of Training in Thailand." University of Minnesota, Ph.D. 2001. (Transfer of Training, Global HRD)

ZOTTO, NANCY. "Workforce Development Needs for the 21st Century: A Five-County Needs Assessment." Southern Illinois University Carbondale, M.S. 2001. (Workforce, Needs Assessment)

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